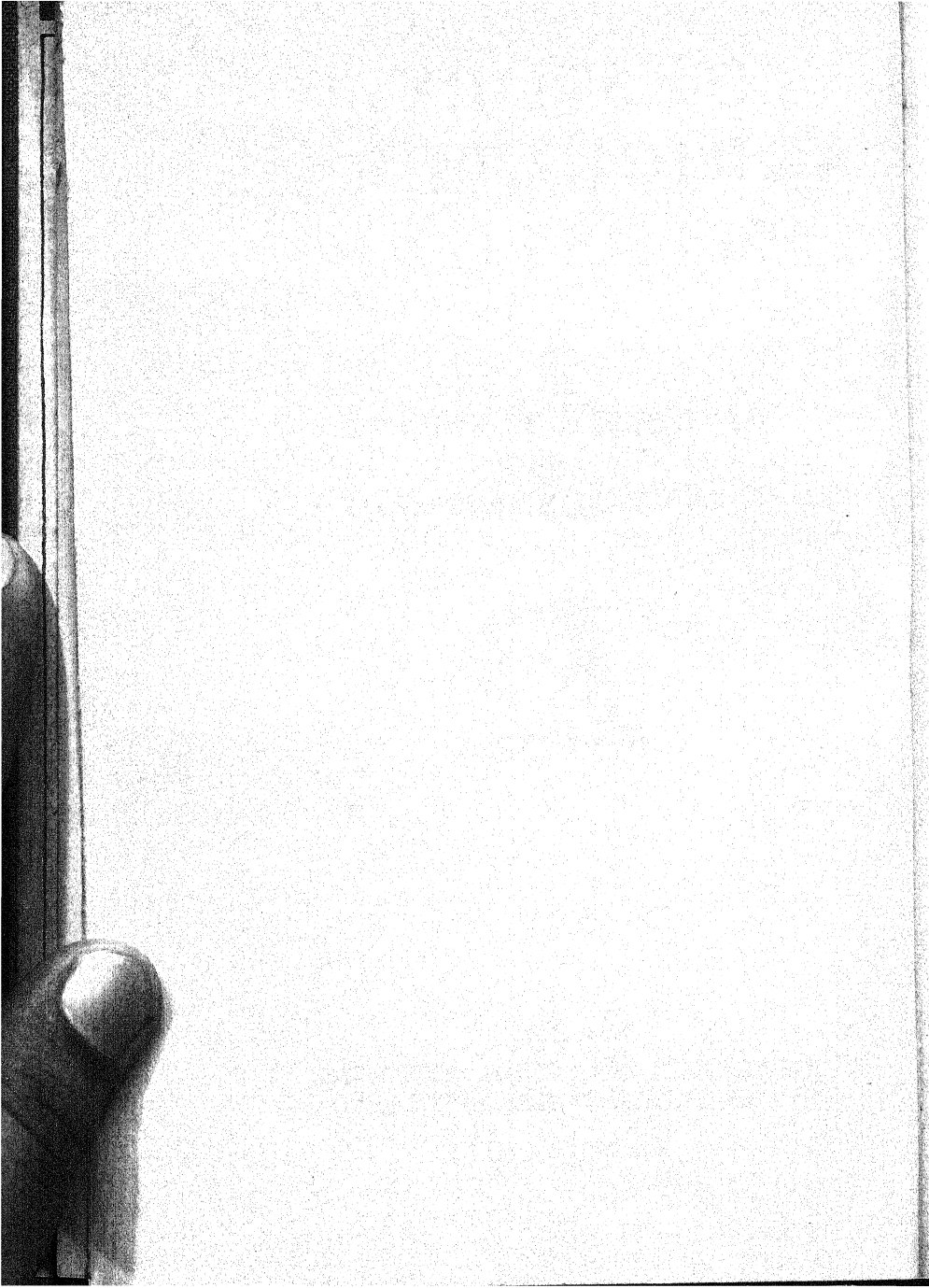


The STORY of
AGRICULTURAL
MISSIONS



The STORY of AGRICULTURAL MISSIONS

By
BENJAMIN H. HUNNICUTT
and
WILLIAM WATKINS REID



New York
MISSIONARY EDUCATION MOVEMENT
OF THE UNITED STATES AND CANADA

10-11-48.
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PUBLISHERS' NOTE

When he was last on furlough in North America, Mr. Benjamin H. Hunnicutt—who had gone to Lavras, Brazil, in 1907 as the first agricultural missionary to South America and who was one of the first missionaries appointed to any field for specifically agricultural work—was invited by the Missionary Education Movement to prepare a book on this comparatively recent form of mission service in which he has been one of the outstanding leaders. It was then expected that the manuscript would be published as soon as the author could complete it. Shortly after Mr. Hunnicutt submitted it, however, the Board of Managers of the Missionary Education Movement decided that the many significant developments in the study of the relation of Christianity to rural questions throughout the world called for the preparation of a series of books for all grades on this general theme. It was therefore thought best to postpone publication of the manuscript in order to make it a part of this expanded program of literature and also to permit the inclusion in it of fuller reference to the results of the field studies on rural mission problems then being made in Africa and Asia by Dr. Kenyon L. Butterfield under the auspices of the International Missionary Council.

Since Mr. Hunnicutt had returned to South America and was not available for the conference necessary in adapting and extending the manuscript to meet the requirements of the new plan, he generously consented to the proposal of the publishers that Mr.

William Watkins Reid of the staff of the Board of Foreign Missions of the Methodist Episcopal Church should prepare the final text and share in the authorship of the volume. Mr. Reid has been active from the beginning in the work of the International Association of Agricultural Missions and has followed closely the development of agricultural mission service in many countries. He is the author of many articles and pamphlets on the subject.

The publishers acknowledge with gratitude Mr. Hunnicutt's willingness that Mr. Reid and a special committee of the Movement should put the book through the press without delaying its appearance further by submitting the final manuscript to him for review.

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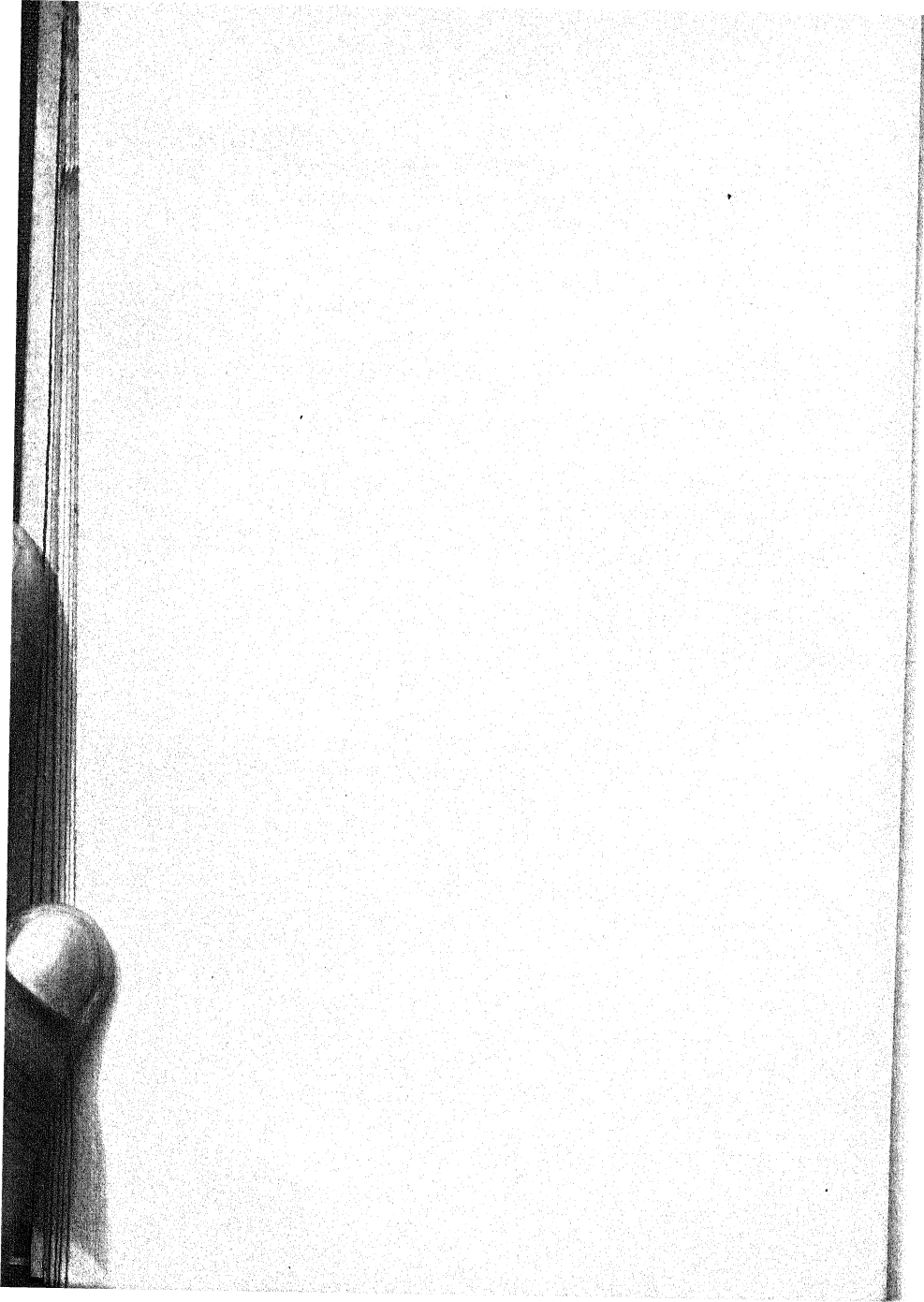
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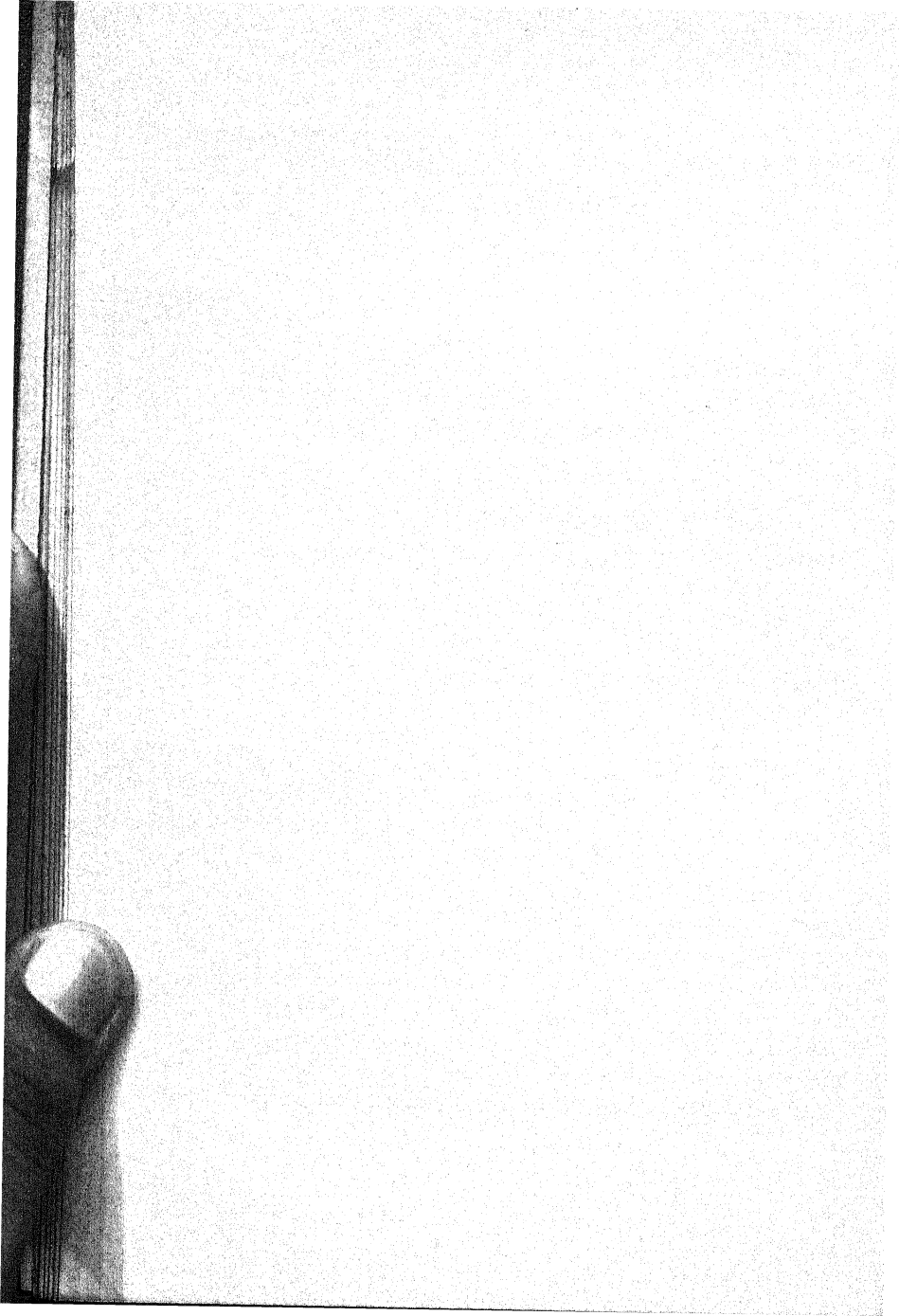
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CHAPTER I

CHRISTIANITY AND THE WORLD'S FARMERS

ONE of the great epochs in human civilization began the day some prehistoric genius, one of our ancestors, dug a hole in the ground with a sharp stick and into that hole dropped a seed of wild grain or transplanted some growing herb. Before that day all his and our ancestors had picked their fruit and vegetables from the trees and bushes and plants that chanced to grow in the valleys where men wandered.

This new art of planting and harvesting—this bringing into subjection and control the uncertain gifts of nature—in time made for settled communities, for values in land, for the cultivation of hitherto unfruitful lands, for the development of the many agricultural crafts, for new social and economic organization, and gradually for the discovery of many of nature's greatest secrets. Agriculture, even in its most primitive stage, was the first known and practiced science, and from it all other sciences have developed.

If we are to agree with Ralph Waldo Emerson, and history seems to bear him out, that "the first farmer was the first man, and all historic nobility rests on possession and use of land," then we must agree also that agriculture is the mother of many of the arts of mankind. For only a people possessing wealth (and land has always been one of the real bases of wealth) could produce the leisure and the so-called leisure class

—or at least the non-laboring class—from which the arts have sprung. Thus agriculture has been one of the great civilizers.

Today, far more than in the early days of civilization, the world is dependent upon the farmer and his craft. There are indeed few places on the earth so favored that one has simply to reach into the trees for his food, and slay the animal in the forest for his clothing. By the sweat of his brow indeed does man secure food and raiment. The enormous population of the earth—about 1,952,000,000 persons¹—demands an enormous food supply. It may be true, as the old Chinese and Irish proverbs testify, that “the Lord never sent a child into the world without providing also enough for it to eat”; but that potential food for the child must be secured by hard toil. The outlook is that the total population of the earth will increase rather than decrease through coming decades and centuries. Hence the problem of providing three square meals (or their equivalent) each day for 1,952,000,000 people is the greatest human enterprise in the world. And it is an enterprise in which God and man must work together. The Power that keeps the universe in order, that sends the seasons, that gives the hundred-fold increase to the tiny seed, cannot withdraw his cooperation with the farmer for a day without wiping out mankind.

Every one of us, in a real sense, is dependent upon the farmer. Were he to strike—to refuse to plant the seed and cut the grain, to refuse to cooperate with God through the workings of nature—we should

¹ Estimate in 1929 Yearbook of the League of Nations.

starve. In return for the food the farmer gives us, society expects each one of us, directly or indirectly, to contribute to the farmer's well-being, to his happiness, to his needs of body, mind and soul. Whether civilization will continue to develop depends to a large extent upon whether adequate place is made in that civilization for the man who tills the soil. We can develop the arts of peace, science, philosophy, education and religion only if the farmer is given and uses these arts. We cannot have an illiterate, under-paid, religiously neglected farm population and build upon that foundation a permanent and growing civilization.

FOLKS, FARMS AND FOOD

It is estimated that from sixty-five per cent to seventy per cent of the people of the world—at least one billion people—live directly on the land in families engaged in raising food. If we add to these the large numbers engaged in transporting and in otherwise handling and selling food, the total will be more than eighty per cent. This, of course, varies somewhat from nation to nation. But across the face of the earth the providing of food is by far the greatest single concern of every people.

In a country like China or India, where there are enormous populations, relatively small farms, and very primitive methods of cultivation, the problem of sufficient food supply is a never-ceasing concern. Famine—caused by drought or by flood—wipes out millions of lives, as has recently been experienced in several large provinces of China. A time of famine finds these people, many of whom live in almost constant hunger, without surplus food to tide over a lean period, without

funds to buy from others, without means of transportation to bring or reach food for their families. Most ancient and many recent migrations throughout the world were in search of food when flood or drought or pestilence or over-population in a limited area brought hunger. Such situations are lessening, due to agricultural knowledge, organized relief, better transportation, plans made by governments and by private agencies, as the British Famine Relief in India, the China Famine Relief, and the American Red Cross in various places. Some day, however, international agreements will doubtless have to settle what is to be done to relieve a nation having a greatly limited farm area and a rapidly growing population. Will such a nation be allowed to expand by peaceful, orderly colonization or by some other method? Japan and several European nations are rapidly approaching a time when such a question becomes important to them and to the world.

Today, as perhaps never before in human history, the eyes of the world are upon the farmer. Even parliaments and scientists talk of his problems, while the church admits its activity has been in the past too largely confined to the cities. Everywhere in the United States and in many places overseas there is recognition of the need for a better environment for the men and women living and laboring on the farms, and for better attention to the processes of agriculture, the distribution of agricultural products, and the material reward of the farmer.

In the United States legislative measures are being sought to better the social and economic conditions surrounding the isolated tillers of the soil.

Soviet Russia is attempting a reorganization of its entire agricultural system; attempting the most colossal economic readjustment in history, for eighty-two per cent of Russia's vast millions are farmers scattered over one-sixth of the world's land area. The Soviet government has nationalized the soil, and is giving its best energy toward making collective rather than individual farming a success. "One of the great experiments of the world is being tried out in Russia today—the experiment of a united, cooperative, socialized order, in contrast to competitive, individualistic, nationalistic states," says Sherwood Eddy. "Dogmatists on both sides may scout with contempt the possibility of an experiment in any but their own orthodox way of life. History may decide between the two. Or, it may evolve elements of value in each that can exist side by side, or it may enable both to make a lasting contribution in a higher synthesis of experience."

Japanese farmers are attempting to solve their difficulties with landowners and with consumers by the organization of unions for collective bargaining.

The farmers of France complain of the shortage of labor and of competition from grain exporters from America, from Central Europe, and from Russia.

One of the objectives of the Nationalist government in China is the emancipation of the small farmer from practical serfdom and poverty. The Nationalists of India have similar aim. And many leaders of both peoples are looking, not unfavorably, at the experiment now in progress in Russia.

Korea is faced with her greatest economic problem when she attempts to lift her farmers above the status

of peasantry. The average yearly income of Korea's rural peasant is less than one hundred and fifty dollars.

A RURAL PHILOSOPHY NEEDED

Parliamentary measures to aid the farmers financially or to give them otherwise some of the newer comforts and necessities of life that come to urban dwellers, can at best be only temporary. The problems of agriculture and rural life can be changed only by a change in the philosophy of life held by practically every people. The world must recognize the absolute necessity of the farmer and his work, not only to civilization but to human existence itself. And it must reward him accordingly. We must love the soil; we must recognize it as God's greatest gift; we must regard its use not as something that "dirties the hands," but as a sacred trust for the present and the future. Coming generations will doubtless wear out and use up the coal deposits, the oil wells, the gold and silver and copper and iron mines—but the resources of the upper crust of the earth, that few feet upon which animal and vegetable life live and depend, need never be exhausted if properly and scientifically cared for. Left alone by man, the impoverished soil will grow rich again from nature's gifts.

The famed Irish poet and philosopher, "Æ" (George Russell), gives America this word of warning—a word that is increasingly necessary the world over:

"I have been frightened as a human being by the exodus of the rural population to the cities which have sprung up so magically in half a century. . . .

"In the last ten years four million people have left

the land in the United States; nineteen million acres have gone out of cultivation and seventy-six thousand farms have ceased to exist as farms. One of your editors says twenty per cent of your population are now on the farms, fifteen per cent is enough to produce all the food that is required, ten per cent properly educated could do it. Yet those who remain produce more than ever before. The agricultural engineer and the agricultural scientist came to the aid of the depressed farmer. . . . But what is going to happen to your civilization if this process goes on?

"If ninety per cent of your people live in big cities and only ten per cent on the land, I believe that must be a peril to life, to the quality of your humanity. Humanity is like that ancient giant Antæus, who drew strength from touching the earth. In London I was told that only one Londoner of the fourth generation was known. I met him, a creature of aches, and ailments since his birth. I looked with terror on the shrunken anæmic and bloodless population, the third generation of factory workers, about Lancashire. . . .

"I wish to get the reformers and foreseers in your country to think of building up a rural civilization, something which the world has never yet seen. It is the noblest and most practical of human enterprises, the building up of a civilization. And it will need the highest political genius to so organize the rural community that something of the culture and prosperity of so great a state will be reflected in the men in the villages and fields."

As population increases, as farm machinery increases, as man labors on the farm, and as urban industry calls for more and more sturdy sons of the country,

we must determine what proportion of people must remain close to the soil so that a nation's life or a continent's life may find balance. Rural depopulation cannot go on endlessly; urban centers cannot forever absorb the best youth of the country. Such a process will in time bring disaster to both. Certainly whatever of culture and comfort and other benefit comes to the city dweller must be extended also to benefit the city-feeding and city-supporting rural population.

Another and less tangible question the world over is the relation between life on the farm and the development of character. This is a fundamental moral and spiritual question, concerning which Dr. Kenyon L. Butterfield, former president of Michigan State College of Agriculture and of Massachusetts Agricultural College, said to the Jerusalem Meeting of the International Missionary Council in 1928:

"The farmer works with nature at first hand, and the religious aspect of this intimate contact is of great significance. No worker in the world is more completely under the law of nature than the farmer, or so immediately the beneficiary or the victim of nature. Whether the farmer shall be a pagan fatalist or the possessor of a lively religious faith is an issue that will always emerge from his daily work. Moreover, we should preserve what the Danes call 'the joy of the soil': the romance, the beauty, the poetry, the spiritual significance of intelligent manipulation of soil and plant and animal. The constant revelations of beauty in the rural environment are essentially religious.

"In the long look ahead, the success of the world-wide quest for democracy will be profoundly affected by the farmer's place and influence in society. A suc-

cessful democracy is dependent upon intelligence and education, upon occupational skill based upon science, upon the organizing power of its various groups, upon interest in a cooperating world."

WHY THE CHURCH'S INTEREST IN AGRICULTURE?

"The rural work in mission fields is an organic part of the service demanded of the church everywhere—East and West—to lead in the effort to build a rural civilization that shall be Christian to the core," said the International Missionary Council at its Jerusalem Meeting. "This effort looks toward the development of an intelligent, literate, and efficient rural population, well organized and well led, who shall share the economic, the practical and the social emancipation, as well as the continued advancement of the masses of men, who shall participate fully in world affairs, and who shall be moved and inspired by the Christian spirit. . . .

"Every effort should be made to convince the members of rural communities of the advantages of rural life, and to foster an interest in the pursuits incident to it. Man is an integral part of God's physical creation, and much of his best education, as well as of his moral and spiritual development, can still be drawn from the environment that rural life affords. The full possibilities of rural life, with its essential oneness with the works and ways of God in nature, its poetry and its beauty, have not been fully explored or utilized in education or in religious teaching for rural folk. The dignity and the mental and moral values in the manual work of the farm, for example, are not only of worth in education, but may assist in giving added interest

to rural life itself. We cannot wholly stem the tides of economic forces that call people away from the country to the city; but we can at least teach the youth who have gifts and liking for rural life the possibilities for the full life that inheres in the rural environment."

A MISSIONARY PROGRAM FOR RURAL LIFE

The aims of the Christian missionary as he endeavors to serve in rural communities in America or in Asia or in Africa are thus summed up by Dr. Thomas Jesse Jones in the report of the Jerusalem Meeting:

"1. The development of Christian character, Christian fellowship, and Christian service.

"2. Healthful living in a healthful environment.

"3. The effective cultivation of the physical resources necessary to the food supply and the sound economic development of people in villages and in the open country.

"4. The improvement of family life through a knowledge of such home activities as the care of children, food, sleeping facilities, sanitation, and all that centers about the life of women and children.

"5. A social attitude toward neighbors which makes possible sincere cooperation despite the obstacles of nationality, race, color, or language.

"6. Recreation—physical, mental, and spiritual—providing not only a sound use of leisure time but an appreciation of the beautiful, the good, and the inspiring in nature and in humanity."

A concreting of this program of agricultural reform is to be found in "The Social Creed," a part of

the Discipline, or book of rules, of the Methodist Episcopal Church, and similar to creeds adopted by some other American denominations. The two commandments of Jesus—"Love thy God" and "Love thy neighbor"—translated into terms of agriculture, mean, says this "Social Creed":

"1. That the farmer shall have access to the land he works, on such terms as will insure him personal freedom and economic encouragement, while society is amply protected by efficient production and conservation of fertility.

"2. That the cost of market distribution from farmer to consumer shall be cut to the lowest possible terms, both farmers and consumers sharing in these economies.

"3. That there shall be every encouragement to the organization of farmers for economic ends, particularly for cooperative sales and purchases.

"4. That there shall be available an efficient system of both vocational and general education of youths and adults living on farms.

"5. That special efforts shall be made to insure the farmer adequate social institutions, including the church, the school, the library, means of recreation, good local government, and particularly the best possible farm home.

"6. That there shall be a widespread development of organized rural communities, thoroughly democratic, completely cooperative, and possessed with the spirit of the common welfare.

"7. That there shall be the fullest measure of friendly reciprocal cooperation between the rural and city workers."

AGRICULTURAL CRUSADERS

The gospel of Christ had its birth among an agricultural people; both the Old and New Testaments are replete with agricultural illustrations and terminology. Many of Christianity's greatest leaders through the ages have been interested in the soil and in rural life, and many of its earliest missionaries to lands outside Europe and America have shown an interest in agriculture and in the welfare of the farmer.

To go back no further than the opening of the era of modern missions we find that William Carey, who went from England to India in 1793, maintained himself by the culture of indigo in the early years of his service practically without cost to the society which sent him overseas. And through all his long life he gave a threefold ministry; he was a preacher of the gospel, he was a teacher, author and translator, and he was an agriculturist. It was he who, in 1820, founded the Agri-horticultural Society for India when there were but two other agricultural societies in the world—those in Italy and in Scotland. It is noteworthy that this Indian society was the forerunner of the famed British society, the Royal Agricultural Society of England, which was formed eighteen years later. In the prospectus outlining the need of this society in India, William Carey wrote:

"In one of the finest countries in the world the state of agriculture and horticulture is abject and degraded, and the people's food poor, and their comforts meagre. India seems to have almost everything to learn about the clearing of jungles, the tillage of wastes, the draining of marshes, the banking of river-

courses, the irrigation of large areas, the mixing of composts and manures, the rotation of crops, the betterment of tools and of transport, the breeding of stocks, the culture of new vegetables and herbs, the planting of orchards, the budding, grafting and pruning of fruit trees, the forestation of timbers. Their only orchards are clumps of mangoes crowded together without judgment. The recent introduction of the potato and the strawberry suggest what might be done."

With Carey as secretary of the society and of its Plantation Committee, experiments were carried on with fruit trees imported from England, and in the culture of coffee, cotton, tobacco, sugar cane, and several cereals; prizes were offered for the best farm products grown privately. For years he carried on correspondence with agriculturists in many parts of the world, securing numerous seeds and plants which he tried in the soil and climate of India. It is said that many plants growing wild and cultivated in Bengal today came from seeds first carried by wind or bird from Carey's garden. His interest in birds was as great, and his aviary contained many specimens never described or named until he first possessed them.

Once when Carey received word that certain moneys that had been raised in America for Serampore College, where he taught, were being withheld until the trustees "were assured that the money was not to be spent on the teaching of science in the college, but only on the theological education of the Hindu converts," he was greatly annoyed.

"I must confess," was his reply, "I never heard anything more illiberal. Pray, can youth be trained up

for the Christian ministry without science? Do you in America train up youths for it without any knowledge of science?"

How another early missionary, one destined to work miracles with men and with plants in Africa, chose his life work, is told by his biographer: "A tall youth of fifteen was following the plow in a field in Perthshire. His two horses came to a standstill in mid-furrow, and he was not minded to urge them on. Leaning on the stilts of the plough, he began to brood over his future. What was it to be? The question flashed across his mind, 'Might I not make more of my life than by remaining here?' He straightened himself and said, 'God helping me I will be a missionary.' That was the making of the man and the missionary. His whole life lay in that deed, as the giant oak lies in the acorn. The divine call to the Perthshire youth came as it did to Elisha, at the plow. In the days of his flesh it was Christ's way to call his apostles when busy at their daily toil."

Thus James Stewart, fellow countryman of David Livingstone, dedicated his life to Christian service in Africa. Livingstone had literally begun the opening up of Africa to Europe and America. The interest that Livingstone took in the vegetable and animal life of Africa is shown on almost every page of his writings, for he was as great a natural scientist as he was a Christian missionary. But it remained for James Stewart, organizer and builder of Lovedale, the great mission institution in South Africa, to inaugurate the training of Africa's sons in the science of farming. Through all his years of service he never lost his interest in agriculture.

"There was a wonderful peculiarity about Stewart's interest in farming and kindred work. It seems to have yielded him the joys of creating, and it proved that he had a genius for agriculture. Like Antæus, he got fresh vigor from the touch of Mother Earth, and he had a deep delight in all the bounties she yields to man. He was mindful of the fact that God first planted a garden, and charged man to 'subdue the earth and dress it!' Stewart realized that 'it is not only that agriculture is the stable base of a nation's prosperity, but there could be no true manhood or Christianity without cheerful and steady toil.'" In developing the mission school and property at Lovedale, James Stewart literally made the desert to blossom like the rose. Upon what had been an unattractive and unproductive tract, he made fine crops to grow, and trees soon gave the whole region another atmosphere.

Carey and Stewart are typical of many of the earlier missionaries, and indeed of many still serving and entering upon service in Asia and in Africa. Country-bred boys, loving the soil, knowing the wealth lying wherever the spade is turned, they could not refrain from putting into practice their knowledge of better crops, better food, better farming. They linked with their evangelistic and educational work the rudimentary things of agriculture that helped the hard, practical, needy, everyday life of the people with whom they associated themselves. The presence of suffering and hunger impelled them to give such relief as they could. And today on every mission field farm-bred and farm-trained missionaries, though they be set aside for evangelism or for education or for medicine, often give

some instruction in simple farm knowledge—a service the statistics do not record.

PIONEERS OF THE MODERN MOVEMENT

Almost a century elapsed between William Carey's work in India and the sending of the first college-trained agriculturist to Asia or Africa by a missionary agency. In that period some missionaries taught agriculture, it is true, but only as a by-product of their educational mission. Today, just as the United States government sends out to every nook and corner of the world especially trained and qualified "agricultural explorers," so the churches of America and of Europe are sending forth agricultural crusaders to serve among the needy peoples of the world. As early as 1876, Dr. W. S. Clark, one of the first presidents of Massachusetts Agricultural College, established the Imperial Agricultural College in Sapporo, Japan, lecturing on Christian ethics and on agriculture in the same classroom; but he was regarded as an educational rather than an agricultural missionary. One of the earliest and most successful schools organized with scientifically trained staff to teach modern agriculture was the Thessalonica Agricultural and Industrial Mission, founded in 1903 in Macedonia.

One of the first agriculturally-trained men to enter foreign mission service was William C. Bell, a graduate of the Agricultural College of Cornell University. Mr. Bell was graduated from Cornell, in the agricultural course, in 1897, and in July of that year he went to Africa as a missionary of the Phil-African League, a Swiss society. After some years Mr. and Mrs. Bell became missionaries of the American Board of Com-

missioners for Foreign Missions (Congregational) and have since been engaged in direct agricultural work. Mr. Bell has given special attention to the problem of better crops, better seed, better livestock, rotation, new varieties, irrigation, improved citrus trees, bananas and other fruits. He has succeeded in getting African men to use the plow to replace the old time hoe wielded by women. The Africans have also become interested in growing rice, wheat, flax, cotton and coffee. Mr. Bell also planted one of the first wheat fields of the early days on the uplands of the Bie, in connection with his mission work.

In 1902 the American Board of Commissioners for Foreign Missions sent an agriculturist and an engineer to their work in India: J. B. Knight for agriculture and D. Carroll Churchill for industrial work. A new economic policy was outlined in the following recommendation of the board to the mission in India: "We recommend that our missions in India so modify their courses of instruction that all male pupils aided through the mission shall have some practical manual labor, adapted to the conditions and needs of the country. We see no reason why this should not apply also, with necessary modifications, to the female pupils. It is essential that the future Christian community in India have well-equipped farmers, mechanics, artisans and merchants just as they have learned government officials, preachers and teachers. If that community is ever to become independent of foreign charity, it must comprise independent producers and wage-earners. We urge the Indian missions to enter upon such a course systematically, so that it shall be operative alike in all parts of the field."

Definite work in agriculture was added in 1907 to the curriculum of the Canton Christian College (now Lingnan University) following the commissioning of George Weisman Groff as an agricultural missionary. In the same year Benjamin H. Hunnicutt went as the first agricultural missionary to South America where he organized and became director of an agricultural school in Lavras, Brazil, under the Executive Committee of Foreign Missions of the Presbyterian Church in the United States. In 1907 also the Methodist Episcopal Church sent out its first trained agriculturist, H. Erne Taylor, to Old Umtali, Rhodesia. It would seem that the year 1907 really marks the definite and planned launching of agricultural work by a number of different American mission boards; but now after nearly a quarter of a century we are only beginning to realize its importance to the peace and happiness of the world. Of the twenty-nine thousand Christian missionaries in service in the non-Christian world, scarcely more than one hundred are giving full time to agricultural training. It is not that fewer men and women are needed in evangelism, in medicine, in education; but that more are needed to be evangelists as they give themselves fully to helping the billion people who are engaged in mankind's greatest single industry—the supplying of daily bread. While eighty per cent or more of a nation or race are engaged in farming, can the church be adequately serving when it gives less than one per cent of its missionary manpower to enriching rural life?

In this field of agriculture lies one of the greatest challenges to present-day Christians.

CHAPTER II

INDIA: AN EMPIRE OF VILLAGES

PANDU was starving. His wife and two-year-old baby were starving. Crops were poor, there was drought, there was hunger. Pandu borrowed five rupees and seven *khandies* of *dhan*; that is, he borrowed about one dollar and seventy-five cents and ten bushels of unhulled rice. Rice was worth about one rupee per *khandi*. His total indebtedness, to keep his family from starving, was thus about four dollars and twenty cents. And it tided them over the season's terrors.

It was in 1925 that Pandu made this transaction. He borrowed it from a landlord and money-lender in his native village of Karpawand, twenty-six miles deep within the jungle from Jagdalpur, India. And for that debt he became the servant of the lender. For a year he worked for the landlord, receiving nothing but one *khandi* of *dhan* a month—half enough to feed himself—and had to borrow more money and more *dhan*, thus increasing his indebtedness. Another villager paid off his debt, thus acquiring him as a virtual slave. He forced Pandu to borrow more money and food to keep his family from starving. Four times in five years Pandu "changed hands"—and each time, with increasing indebtedness, he was farther from freedom. Today (1931) his total indebtedness is about eighty rupees, or twenty-eight dollars. And when Pandu dies his children will continue to be practically slaves of the man to whom the debt is then owed!

Pandu is a Christian, though his master does not give him time even to attend a Christmas service. His wife, Elizabeth, is a Christian. Their three children are being taught something of Christianity. Of course Pandu and Elizabeth, because of their poverty, cannot send them to school.

This almost incredible story is not fiction; it is vouched for by the Rev. John W. Lanham, a missionary in Jagdalpur. It is a story of the extremity to which the money-lender presses his greed, but it is not an unusual story. Any missionary in rural India could recount scores of similar family situations among the people of the seven hundred thousand villages scattered over that land.

It is said of the Deccan peasant—and this is equally true of peasants elsewhere in India—that he is not only poor but bankrupt, hopelessly in debt. This economic situation implies insufficient food, overwork, child labor, bad housing, bad water, unsanitary conditions; these all spell in due time lowered vitality in production, lowered resistance to disease, a fatalistic lethargy, and depression of spirit. So we find the farmers and farm laborers, in great numbers, reduced to a stage of semi-starvation, perpetual indebtedness, chronic poverty, general hopelessness.

It is estimated that forty dollars per person per year is the annual income of all India, and that a population as large as that of the entire United States is constantly within the zone of extreme poverty. Famine, drought or any unusual demand for money sends the farmer to the money-lender. His rate of interest is from twenty per cent to seventy-five per cent per annum—and once in his clutches the borrower and his

family are soon reduced to a serfdom that is but another name for economic slavery.

The remedy for this situation—brought on by overpopulation and by farms too small to give a surplus for lean years—lies largely in improved agriculture, both stock and equipment, and in improved farming methods, so that borrowing will be unnecessary and money-lenders will cease to ply their trade. The other chief remedy is the supplying of necessary funds for loans at reasonable rate of interest and adequate provision for repayment on convenient terms. The most acceptable method of this agricultural funding seems to be the cooperative bank in which most of the farmers of a community have a share. Agricultural missionaries are contributing their experiences in applying these two remedies to India's poverty.

HINDUISM AND POVERTY

One other leading cause of conditions of poverty in India is Hinduism. To Hinduism must be credited largely the early marriages of Indian youth, the establishment of caste that keeps the poor forever poor, the worship of cattle that are an economic loss to the country, the prohibition of animal slaughter, and the large class of non-productive religious mendicants.

Cattle as objects of worship are a tremendous economic handicap to India. They may not be slaughtered for food, it being a heinous crime to kill a cow. While sacred in that they must not be killed, they are not sacred enough to prevent their use as work animals, so almost all the burden-bearing is done by oxen. The government estimates the cost of maintaining some fourteen million needless cattle at a minimum of

eighty million dollars annually. These millions of dollars annual waste would make a great difference between quasi-starvation and a fair food supply to at least several millions of these people. Yet this is all in the name of religion!

Not the least contribution of Hinduism to the prevailing poverty of its own people is to be found in the four millions of religious devotees and mendicants who get their subsistence without a mite of toil. One who has long been resident in India writes, "India is a country of strange contrasts, and one of the strangest of them is the stark poverty of the starving, industrious peasant, and the sleek, lazy, improvident beggar who masquerades as a holy man and lives comfortably on the charity of the neediest nation of the world."

ILLITERACY AND IGNORANCE

According to the simplest test for literacy—"ability to write a letter to a friend and to read the answer"—only fourteen per cent of the men and two per cent of the women of India are literate; and a large proportion of these are in the urban centers. The late K. T. Paul, an authority on rural India, says that in a period of twenty years (from 1901 to 1921) the literates in the Madras Presidency increased by one million two hundred thousand, while during the same period the illiterates increased by three million; in other words, the population is increasing so rapidly that at the present rate of educational provision it will take forty years to provide schools for present needs, without taking into account the normal increase in population during that period.

Literacy, however, is only a symptom. It is within the range of possibility for a people or a nation to be illiterate but not ignorant; it is possible to transmit knowledge by word of mouth. But modern agriculture, if it is to become widely followed in India, will probably necessitate very greatly increasing the literacy of the whole population.

If the conditions producing illiteracy and ignorance are to be dealt with in any adequate measure, the whole present educational program and educational personnel, both governmental and missionary, must be greatly increased; and provision must be made also for a comprehensive plan of practical adult education.

No picture of the efforts of the West to contribute to the agricultural knowledge and to the rural reconstruction of Indian village life would be complete without brief mention of plans promoted and results achieved by the British government in India.

VILLAGE PROBLEMS AND THE GOVERNMENT

The British government for some years has been endeavoring to improve Indian agriculture; and it has contributed much to the improvement of the economic conditions of the people. It has built, or has been largely responsible for having built, thirty-eight thousand miles of railroads, making all parts of the country reasonably accessible; this serves as a great protection against the possibilities of famine and the inability to reach the stricken areas with food. It has provided India with the largest irrigation works in the world, one-eighth of the whole cultivated area now being under irrigation. The total area irrigated from canals, wells and tanks amounts to fifty-six million five hundred

thousand acres. In British India the area under irrigation by canals will be increased as soon as present works are completed to a total of fifty million acres. One project calls for the expenditure of sixty million dollars. The total mileage of canals has already passed sixty-seven thousand. Over one thousand two hundred wells are being dug each year. The significance of these undertakings as to their value in crop insurance to the Indian farmers is almost beyond our comprehension.

The British government is helping to solve the problem of famine by control, at a profit, of two hundred and fifty million acres of forests, one-fifth of the total acreage of British India. The administration of these forests yields a revenue of ten million dollars each year.

In regard to cattle, the government is endeavoring through three main lines of effort to guarantee their improvement: by veterinary attention in the inoculation against rinderpest and other diseases; by encouraging milk production as a health asset and to increase the food supply; and by using a process inoffensive to the Hindus for eliminating undesirable breeding animals.

The indebtedness problem is being attacked through the cooperative societies under government supervision; more than seventy thousand such societies are registered, although not all are adequately functioning.

Consolidation of small and scattered parcels of land under cooperative and government supervision has been a great boon to those who have taken advantage of it. In one village "an owner who had his land scattered in two hundred different fields now has it in one,

and five more have single plots where each before had over one hundred."

Several experiment stations have done excellent work, and some effort has been put forth by the government for agricultural education. Comparatively little has been done, however, to pass newly-acquired or discovered information on better agriculture on to the ultimate user, the individual farmer. The report of the Royal Commission on Agriculture appointed by the Crown to study conditions and make recommendations has attracted wide attention. This Commission has recommended the formation of "an imperial Council of Agricultural Research which will take over experiment stations, the training of workers, agricultural publications, meetings of experts, educational reform to fit children for village life and teach adults by eye and ear to know those things which are of value to the peasant; relief from population pressure by migration to districts that are underpopulated; better methods of marketing which will secure both adequate remuneration for the farmer's labor and release from the money-lender and the middleman."

INDIAN LEADERS INTERESTED

The Native States have not been indifferent to agricultural progress within their bounds. They also have been promoting irrigation projects and farming developments through their own agricultural departments. Hindu leaders have been slow to attack these problems of everyday life, but the unrest of the people of late years has turned the attention of some of the leaders to the needs of the multitudes. Mahatma Gandhi recommends a return to the hand-spinning of

all cloth used by Indians, looking towards a remunerative occupation for the villager, rather than the enrichment of the capitalist owning great textile mills. Interesting also is the attitude of the distinguished poet, musician, and mystic, Rabindranath Tagore. Near his idealistic school colony, known as Shantiniketan, "the Abode of Peace," he maintains an agricultural village under the name of Sriniketan, "the Abode of Energy," which is the agricultural research department of the colony.

THE MISSIONARY CONTRIBUTION

The West has experienced many of these problems that today confront the Indian farmer, the Indian citizen, the Indian reformer. The West has solved some of them in the spirit of the Christ; others are in the process of solving in America and in Europe. The Christian church, actuated by the spirit of the Master, seeks to aid India in finding her solution. That is the purpose of her missionaries. They seek to apply the spirit of the Christ, plus what they have learned of the West's solution of these problems, to the everyday tasks and problems that confront India's people.

A number of early missionaries to India saw the economic needs of the people and made some attempt to improve agricultural knowledge and practice. But only within the past two or three decades have scientifically trained agriculturists served thus as missionaries. And they have served in two major and quite different ways. One group has been intent chiefly upon training agricultural leaders for the broader scientific grappling with the nation's needs; the other has sought rather to serve and lift the Indian village,

raising the whole life of the community—chiefly through developing model villages. The former is represented by Allahabad Agricultural Institute; the latter especially by Ushagram and Moga—names that have become symbols of hope for many of India's people.

SAM HIGGINBOTTOM OF ALLAHABAD

Sam Higginbottom, a graduate from Princeton in 1903, went in the summer of that year to India, intent upon the work of an evangelist.

When his fellow missionaries gathered together in their annual session and allotted to themselves the tasks that had to be done within the mission boundaries, it was discovered that a teacher was needed in the Allahabad Christian College. It was voted that the new recruit should be assigned to that institution as a teacher of economics. His first impulse was to give up the work; but on second thought he decided to labor wherever God called him.

"Economics was a subject I had of course studied in college, but only because it was required," says Mr. Higginbottom, in telling of those days. "In the college at Allahabad all the books were in English, the students were only in the process of studying English, and I knew no Indian tongues. When the students discovered they had a teacher who knew so little about his subject and they knew so little about the language in which it was being taught, they were afraid they would not pass the government examinations. So I had to find the Indian illustrations that made them understand."

To illuminate the dry principles of economics, Mr.

Higginbottom took his students out on holidays to see the people at work in railway shops, in brick kilns, in the factories, and in village industries. In this way he not only taught his pupils but he learned much about India himself.

Being a practical man, he had not made many journeys outside of Allahabad before he discovered that the fundamental economic problem of India was related to agriculture. He saw the desperate poverty of the farmers. He saw them scratch the top of the soil and raise scant crops while a few inches underneath there was new and untouched soil to be had. He saw their families starve and their cattle starve, because in plenty they did not know how to lay aside for the lean years. He saw that more than half the people of India go to bed hungry every night. He saw that under the conditions in which farming was carried on only about eight bushels of wheat to the acre were raised, and that the average income of the farming class did not amount to as much as five cents a day for each working member of the family.

"If missions are justified in any education at all," reasoned Mr. Higginbottom, "they are surely justified in educating the people in what concerns most of them all of their lives—farming." And he unfolded to his fellow missionaries a vision of a Christian people living happily upon a land yielding sufficient for the food and clothing of India's people.

In looking over the whole agricultural problem in India, Mr. Higginbottom found three outstanding facts. First, eighty per cent of the people are directly engaged in agriculture. Second, India must remain an agricultural country, for its climate is against mill

and factory life, its soil is good, and by a sufficient system of irrigation and crop rotation three or four different crops have been grown on the same piece of land in one year. Third, there are fewer caste restrictions in farming than in any other occupation, and even these restrictions apply only to the very highest castes and do not touch the masses of the nation.

When Mr. Higginbottom made his proposal that the missionaries teach modern agricultural methods to the young boys coming to their schools, he at first met with considerable objection. Finally, however, some of his fellow missionaries saw the vision Mr. Higginbottom opened out before them. They granted him two years' furlough to study improved agricultural methods in America. He entered the College of Agriculture of Ohio State University and in 1911 was graduated with the degree of Bachelor of Science. In this period he also obtained the degree of Master of Arts from Princeton.

In the autumn of 1911 he returned to Allahabad, taking with him another graduate of Ohio State University. He also took with him twenty-five thousand dollars raised by friends for the purpose of establishing an agricultural farm and school in connection with the college in Allahabad. This money was used to buy a farm of two hundred and seventy-five acres, to build cattle barns, to buy stock and American implements, so that there was here a well-equipped demonstration farm.

"Your God helps you, and your soil becomes more fertile than ours," was the conclusion reached by the neighboring cultivators when they first saw the improved crops on the college farm. But when Mr. Hig-

ginbottom and his pupils were able to raise similar crops on similar land owned by the villagers, they began to see that these new methods were for them too.

The first students who could be induced to take the agricultural course found themselves without laboratory, without dormitory, and without classrooms. In fine weather they slept and ate outdoors; when it rained they were housed with the cattle. But today there are fine modern buildings for all of this work. Young men are coming from all parts of India to attend this school. Outcastes and Brahmans are studying agriculture side by side and plowing the fields together. Various church agencies are sending their young men to Allahabad for training. Many of them are going back to their communities and conducting their own small demonstration farms in connection with schools and churches.

The old Indian plow—a sharp-pointed bit of iron and wood that goes two or three inches deep and stirs the top of the soil but does not turn it—is disappearing before the modern plow, introduced into the fields of India by Mr. Higginbottom and other experimenters. To plow a field with an Indian plow means going over it at least three times: first lengthwise, then crosswise, and then diagonally, seventeen miles to the acre each way, or fifty-one miles in all. The American pony plow, going five inches deeper and seven inches wide, travels only eight and a half miles in turning over the same amount of land.

Perhaps even more helpful in demonstrating the value of modern methods has been the teaching of many farmers and agricultural students how to build and use the silo. In a recent year in Jhansi seventy

per cent of the cattle died because there was no fodder, due to lack of rain. This is a problem fundamental to the cattle industry and, in fact, to the whole agricultural industry; for there are years of good rain and years of drought. Now, in the form of ensilage, fodder can be kept over from years of plenty to years of famine and drought. Today in villages scattered over North India one hears of the construction of silos according to plans laid out in a pamphlet published by Allahabad Agricultural Institute, as the school is now called. Government officials admit that had there been enough silos in operation, untold misery and heavy economic loss would have been prevented during that famine period. A famine that results in the loss of cattle is really a double famine, because it means that the average farmer will not have an animal the following year with which to plow his land.

The studies made by Mr. Higginbottom and his associates led to the belief that more than ninety per cent of the millions of cattle in India are an economic loss to the country. More than ninety per cent of the cows of India give less than six hundred pounds of milk a year and they do not pay for their own keep. In many parts of India a three-year-old animal can be bought for twenty dollars. The milk and food he eats during the first year of his life is worth more than that. What Allahabad Agricultural Institute is trying to do is to improve the breed of the cattle so that they will give more and better milk and to find other uses for the ox so that he will work most of the time and not be idle for months during the year.

The institute today has nearly six hundred acres of land, five bungalows, classroom buildings, dairy

farms, machinery building, a dormitory capable of accommodating one hundred and twenty students, six silos, its own electric light and power plant, and an irrigation system. It has built up a herd of pure-bred Indian cattle and has four American pure-bred bulls—a Jersey, a Guernsey, a Brown Swiss and a Holstein—with which it is conducting experiments to see which cross will be the most suitable for India. From the most suitable cross it hopes to develop a new breed.

The land has greatly increased in value through leveling, reclamation, irrigation, manuring and rotation of crops, all of which has increased the fertility of the soil. It is doubtful if the property of the Institute could be duplicated today for four hundred thousand dollars.

MOGA: A SCHOOL OF INDIAN LIFE

One of the first and most influential schools in all India in leading the way for rural village and agricultural training—training that reaches down to help the most lowly villages—is known popularly as the Moga School; its real name is the Community Middle School at Moga. This school was founded in 1904 by the Rev. Ray H. Carter, and was developed largely by Professor William J. McKee. In reporting something of the work of Moga School to the Jerusalem Meeting of the International Missionary Council, Professor McKee wrote:

“Life is here considered a unit, there being no artificial divisions between life in school and out of school. In both these places there are instilled in the pupils the principles by which one may live as richly and as pur-

posefully as possible. This aim necessitates a real community life in the school, and it also means that such community life should gradually progress toward higher ideals and toward more valuable service. As to the character of the school activities, it is believed that the pupils' interests are in the things they see in their homes, in the community, in work and play, and in what they hear and read about. Through the carrying out of these activities, both in the classroom and outside, valuable educational results in terms of knowledge, habits, and character values are secured.

"In the Moga School special stress is laid upon activities for the betterment of the village home: its furnishings; its recreations and work; its people and their relationships; its pleasures; the building of a better village house. The village garden or farm and its work and relationships are also carefully considered: wheat and bread, cotton planting, cleaning, spinning, weaving, dyeing, textile designs. . . . Some of the other activities pupils have carried out with rich educational results have been: a study of the village community and its various functions and relationships; the village shop; the village post-office; a forest and lumbering project; the local dispensary and hospital; a banking project; the town grain market; a poultry project and other village crafts and interests. Actual participation in all phases of these activities is emphasized, for much stress is put upon learning through actual planning and doing. . . .

"The Moga School is itself a service station and strives to set an example to its students. It supervises village schools and its own graduates; it conducts a special short course for teachers; it has an annual

teachers' institute; it invites the Christian village people of the Moga District to community gatherings for educational and religious development twice each year; it seeks to minister to people in the surrounding villages; it conducts in the villages practice teaching which includes community service; and it publishes in two languages a *Village Teachers' Journal*, which is later translated into many dialects."

REACHING THE VILLAGER WHERE HE LIVES

Poultry experiments, shows, and the extension plan of disseminating knowledge of new methods, all form a part of the rural program worked out by Arthur H. Slater, an agricultural missionary at Etah in the United Provinces. The low caste people in the district around Etah were very much in need of economic assistance. To help them it was decided to try to improve the breed of country chickens. These weighed about three pounds when mature and were "like rubber to eat." The Village Poultry School set itself to the task. In 1912, eggs from country fowls weighed one ounce each and sold for six cents a dozen; mature fowls weighed three pounds each and sold for sixteen cents; no villages kept pure or cross-bred fowls. In 1918, eggs from cross-bred hens weighed two ounces and sold for eighteen cents a dozen; mature cross-bred fowls weighed six pounds and sold for one dollar each; the number of villages keeping pure-bred fowls was sixty-five.

Similar work in establishing poultry as a cottage industry has been carried on in South Travancore from the Martandum Rural Demonstration Center. The single-combed White Leghorn was introduced as the

best breed, stock being secured from the government farm and from Allahabad Agricultural Institute. Poultry clubs enable the members to get stock and learn to use it to good advantages. This movement for better poultry necessitates adding to the missionary adult education activity a widespread program of teaching on breeding, feeding and care, inexpensive coops and shelter, value of eggs as a food, and marketing.

The Pyinmana Agricultural School in Burma, organized in 1923 along lines quite similar to those of Allahabad Institute, under the direction of Brayton C. Case, is doing excellent work—teaching, experimenting, and demonstrating. About sixty students are taking the four-year course. Good buildings have been erected so that the students and faculty have ample living and working quarters. "Better crops, better stock, better men," is the aim of the school.

Other important experimental mission schools, teaching agriculture and aiming to lift the total life of Indian villages, are to be found in Bhimpur, in Hyderabad, in Asansol, in Chittoor, in Bombay, in Vellore, in Dornakal, in Moradabad, and in Medak.

"THE VILLAGE OF THE NEW DAY"

Ushagram, the "Village of the New Day," so named by the Indians themselves, differs from Moga principally in its physical equipment. It is an attempt actually to reproduce an improved Indian village as the center for education through actual participation in the life of the community. There are no buildings of brick, or stone, or wood. Even the missionary family lives in a house that cost less than one thousand dol-

lars for material and construction. It has mud (adobe) walls, sunproof ceilings, rainproof tile roof, cement floors, five large rooms, running water and up-to-date sanitation.

Sixty boys from village homes in and around Asansol were brought together at Ushagram. Here they live in small one-room mud cottages quite like those of the ordinary Indian village. But the observer will note that each has four large windows, affording plenty of ventilation; that each has a comfortable verandah running the entire length of the cottage front; that the roof is of corrugated iron sheets; that a ceiling of sheet iron covered with three inches of mud keeps the room cool in the hottest weather. These cottages have been built at a very reasonable cost, about seventy-five dollars each, with the help of the boys themselves. Each cottage stands in a yard sixty feet square. In the use of this ground the boys express their individuality; some have flower gardens in front, and all have vegetable gardens in the rear of the cottage. During some seasons of the year the vegetables supply a large part of their food.

Each cottage houses five or six boys of varied ages, and is in itself a family unit just as is the village home. The oldest boy in the cottage is recognized as the head boy; he plans the work of the home and assigns duties for each. The village elects a *Panchayat*, a Council of Five, which is the prevailing form of Indian village organization. Almost all matters of discipline can be cared for by this group. Each boy has his own money earned by such work as gardening and cleaning done before and after school hours. With this money the boys buy their own necessities, such as soap, school

supplies and clothing. Each cottage conducts morning prayers as a family group led by the head boy. There is a well equipped playground.

Each boy of the village spends five hours a day in the classroom under trained teachers. The value of such a school is recognized by the Department of Education, which makes to it a grant of one hundred rupees a month. Effort is made to bring into the school the atmosphere of the village and of Indian habits of life.

A store, operated by the boys, sells them most of their small necessities. The store is organized as a cooperative company. The Ushagram Savings Bank was started as a depository for the Boy Scouts. It grew until it reached the proportions of a regular bank. It is operated entirely by the boys themselves. They select the manager and the cashier. The bank issues its own currency—cardboard disks to represent the different values of Indian coins. These disks circulate as real money and have exchange value in the village. Where does the boy secure money? Chiefly through his own labors in his cottage, his garden, his farm lot, or in the school. He may sell the product of his farm, he may contract to do a piece of work for the school, he may hold a post in the village, for which he gets regular pay.

The boys have helped to build for Ushagram a simple hospital larger than the cottages, but similar in construction. The cottage groups, each in turn, a week at a time, care for the hospital, cleaning the rooms and keeping the grounds in order. Each cottage has its own run for fowls, and poultry houses which the boys have helped to build. The boys take

care of their own chickens and keep records as to receipts and expenditures, eggs, etc. The faculty adviser inspects the runs and coops daily.

Boys from the upper classes spend two full periods each afternoon working in the carpenter shop. They learn to join and cut and construct useful articles. For instance, they recently made a number of small school desks. They also help with the work carried on by the regular carpenter and his helpers. Three boys are working as full-time apprentices, leaving the shop only for their English and mathematics classes.

Since the organization of the "Village of the New Day," new mud-walled buildings have been added, and the number of boys has been increased to one hundred and twenty-five. A girls' school and village, on the same general plan, have been erected some distance away, where about one hundred girls are living and learning.

"Ushagram is a very small place," says Stanley High. "But it provides proof, in miniature, of what can be done for the remaking of India's rural life. More important, it serves to demonstrate just how practical and how transforming the Christian message can be made."

COOPERATIVE CREDIT: A METHOD OF RURAL AID

The Young Men's Christian Association and the British government have been pioneers in the field of organizing cooperative credit societies as an aid to the farmer in India. There are some seventy thousand cooperative societies in British India, with a membership of over two million five hundred thousand. The movement has progressed steadily since the first

official Cooperative Societies Act in India was passed in 1904. The basis of these credit societies, promoted by the government, is unlimited liability, and loans to the societies are restricted to one-eighth the total value of the properties of the members.

After a study of the subject lasting for many months, the late K. T. Paul said, "I felt that true cooperative ideals and also bedrock psychological principles were being compromised to the expediciencies under which the government system had to work for rapidly popularizing the movement. If adequate and constant supervision by qualified men could be assured, financing banks would be running no risks whatever in lending to unlimited liability banks, without reference to property, or at least at a very much better ratio. For, after all, credit is really dependent upon character and not on property." The banks did not believe as Mr. Paul did; and finally the only way to secure capital was for the Young Men's Christian Association to organize its own central cooperative bank, through sale of shares and obtaining deposits. It was called the Madras Central Co-operative Bank, Limited, and officially began to function June 21, 1926.

The societies multiplied rapidly. But with their increase the workers came to realize that mere lending of money at reasonable rates was falling short of attaining the goal. "The conclusion was driven in upon us," said Mr. Paul, "that the Indian villager is not helped unless he is helped simultaneously in every phase of his life, and in regard to every relationship he bears to others. The service must be comprehensive to get anywhere, and it must be simultaneously comprehensive. In other words, what is wanted is not

reform but reconstruction, from the center out and all around."

The plans were changed so that societies and work were concentrated around district and accessible centers, never more than five miles in radius, and two secretaries were located in each center. The original program for cooperative credit societies brought on forcibly an enlarged program which has these objectives: adult education, increasing of earning power, protection from middlemen, social organization, economic foundation, recreation and health education, training of reliable voluntary workers. The program was to combat the "arch-enemies of the peasant, namely, debt, drink, disease, darkness and the devil." This type of work is spreading into the other countries of the Orient and bids fair to do for them what cooperative credit has done for Europe, and cooperatives for marketing purposes are doing in the United States.

Another phase of rural reconstruction is found in the farm settlements or Christian colonies of the Salvation Army. Its work among the so-called criminal castes of India has won wide commendation. These hereditary criminals have been encouraged to settle on the land and are taught to secure a good living from agricultural labor, so that both the roving and the criminal characteristics give way to a desire to maintain a permanent home. "The Salvation Army is a firm believer in agricultural missions," says Leroy Stockman. "The work is for our own converts, and for the criminal tribes. Through government aid we secured a tract of land in the Khanewal District on the border of the Sind desert, and we were allowed thirty years to pay for it. In the village of Shantinagar on

this tract we have two thousand men, women and children. Each settler is given a lease, by the terms of which at the end of thirty years he will own the freehold of the land. This has been a great encouragement to thrift and careful cultivation. The settlers support their own officers, and three school teachers; they have built their own hospital and contribute generously to Army funds."

And so, here and there, by this government agency and by that Christian mission, efforts are being made to improve the standards of India's seven hundred thousand rural villages, and to give three hundred and fifty million people the food necessary to maintain a vigorous, progressive nation. The task is enormous, the workers are far too few, the impact upon the masses sometimes seems disheartening. But looking back over even a decade one sees the long pioneering path along which agricultural teachers have come. Something has been done. Men are ready for greater tasks tomorrow. Today, as never before in India's long years of history, men of many lands are interesting themselves in India's rural problems, and attempting to apply the world's best agricultural knowledge to their solution.

A Brahman, looking at a group of cultivators, remarked, "These villagers, what are they? Stones!"

But the Christian sees in them sons of God, stewards of God's soil, growers of food for God's children.

CHAPTER III

CHINA: AN ANCIENT AND CROWDED FARM

“PLANTS surpass men in recognizing spring.”

“He whose barn is filled knows politeness and righteousness.”

“Eating daily food, remember the farmer’s toil.”

“It is hard to know right from wrong if food and clothing are not sufficient.”

Chinese classical literature abounds with such references to agriculture and to the tiller of the soil. And it is but natural that it should, for four out of every five people in China, or more than three hundred and twenty million men, women and children, live in rural areas and are supported by farming.

Indeed there is a certain sense in which we of America and all the rest of the world might well sit at the feet of China and learn agriculture. Through at least forty centuries China has produced her own food without importations from the rest of the world, and she has kept her soil from being exhausted. It is said that a Chinese invented the plow about 2700 B. C., and that there was a Minister of Agriculture in 2300 B. C. For centuries the Chinese farmer has used legumes in his crop rotation, considering them indispensable.

“The Chinese are one of the toughest and most virile nations upon earth,” is one explanation of China’s long and persistent history despite flood, and drought, and famine, and war, and pestilence. But as marvellous as the people, is the soil that has given them their bread

day in and day out through these centuries. Other peoples have worn out soils and have moved elsewhere—but the Chinese farmer still plants and still harvests, and, no matter what else we may have to say, he has still managed to keep alive and to increase the population of his motherland.

Yet the average farmer is poor and the nation as a whole is poor in food and in material things. The fact of the poverty of the rural population is apparent especially when famine enters a province or a group of provinces. Thousands, often millions, die from want of food. And it would seem that there is almost always a famine somewhere in China. The records of old China tell a story of 1,828 severe famines in the last 1,996 years; the minor famines apparently were not recorded. During the last three centuries, 1,086 famines have occurred. More than 5,000,000 men, women and children died in the famine of 1929-30, said to have been the worst in half a century. Fifty millions were imperilled by the 1929-30 famine, 15,000,000 by that of 1924.

How many millions of lives were lost or bodies stunted as a result of these eighteen hundred periods of want and distress the world will never know; but it is certain that famine has carried off more persons in China than war has destroyed in all the bloody history of Europe, and the pestilence that invariably follows in the wake of starvation has time after time laid desolate whole valleys, cities, and tribes.

An American farmer, travelling in China, would notice that

—the hills have in many sections been stripped of their trees

—little attempt seems to be made to plant trees in either hills or valleys

—cattle are not “well bred” as in America or Europe either for food or for milk

—vegetables and fruit are almost invariably smaller and poorer than varieties cultivated in America and in Europe

—the native plow does only a fraction of the task of turning up the soil; it does not go deep enough and man must labor more than is necessary to produce crops

—corn and other grain are threshed by hand or with primitive instruments

—rice-cleaning and cotton-ginning instruments are primitive

—there are neither railroads nor good roads for vehicles or pack animals in most of China to transport food from province to province

—modern farm machinery of all kinds is practically unknown, so that the Chinese farmer does more actual physical labor and gets less compensation in return than does his American brother for the same number of days upon his farm.

So that, though China has fed and housed the Chinese people for tens of centuries, it has been at tremendous human cost—human cost in lives, in pain, in labor. And while present methods of agriculture continue in China, day-by-day living will continue to cost heavily. China lacks today (as, in fact, most of the world does) agricultural pre-vision—in other words, the application of scientific thought and scientific methods to the elimination of conditions that produce famine.

CHINA'S POPULATION

The American farmer-visitor would conclude that the cause of China's famine condition is that there are too many people to feed. It is estimated by some that the population of China (including Manchuria) is today four hundred and forty-three million; other authorities make lower estimates. And with increasing knowledge of medical science, famine control, and the cessation of warfare, there seems no reason why China's present population should not double before the end of this century.

Such a possibility, of course, gives rise to much speculation—and calls for much agricultural provision.

Can China support agriculturally so large a population? If her present territory cannot support them, what will happen? Will she spread peaceably or forcibly? What is the "saturation point" of population? Will China—and the rest of the world—in time have to put some limit on population, adopt the slogan of "fewer and better babies"?

First, let us consider the cause of the rapid increase in population in China. Authorities seem to be in general agreement that the root of the problem is in ancestor worship. The more male descendants—children, and grandchildren, and great grandchildren—a man can have around him, to worship at his grave when he has passed away, the greater will be his position and blessings in the spirit world, and the more he will be envied upon earth.

Professor John B. Griffing, formerly on the staff of the University of Nanking, has made an interesting

study of the size of Western educated Chinese families as compared with illiterate families, in nineteen different sections, and concludes:

"The evidence so accumulated indicates that for the regions studied, education of parents results in increase rather than decrease in the number of living children. The groups from the highest cultural levels tend to leave the most survivors and reproduce more than their own number.

"Education is not solving China's problem of overpopulation, but rather contributing to it. . . . Birth control propaganda as a means of relieving the situation, regardless of its possibly desirable effects in other nations, would in China touch only the cultured groups and have no other result than to break down the favorable biological selection which is at present the only hopeful feature in China's population growth."

Something of the effect of this overcrowding of people is shown in a recent study made by Professor J. Lossing Buck, also on the University staff. Professor Buck made a survey of 102 farms near Wuhu, Anhwei Province. The total area was 424 English acres, or an average of four acres for each family. The total capital invested was \$157,000 (gold). In those 102 families there were 588 persons getting a living or subsistence from the land only. The life story of a typical farmer operating in one of the villages, as analyzed in this survey, will give something of a picture of rural conditions:

The farmer was born in the village in which he now lives. His father was born in the same village and owned his own farm. His wife was born in the same

village, and so was her father. From his tenth to his fifteenth year he farmed as a boy on his father's land. From the age of fifteen to twenty-four he was a hired man. For eight years more he farmed under his father. He was married at twenty-four. At thirty-three he inherited five *mow* (one *mow* equals one-sixth of an acre) and rented seventeen *mow*. At the age of fifty he had sufficient wealth to purchase ten *mow* of land and to continue operating thirty *mow*. Five years later he purchased two more *mow*, owning seventeen *mow*, less than three acres of land. In his household at present there are a single son, a married son, and the latter's wife. All assist the farmer in operating his three acres, which are held in six separate pieces of land. The seventeen *mow* were valued at about \$1,600, buildings at \$180, farm tools and equipment at \$70, seed and grain at \$4, livestock at \$40. The livestock consisted of a yellow cow and nine chickens. The total wealth of this family of four was something less than \$1,900, and they were of the gentry. The average family income from the farm—food sold and food consumed—was \$359.

Technically, the job of the agriculturist is to feed and clothe the babies, no matter how many millions of them come into the world. He can increase the productivity of the soil, improve the breeds of plants and animals; but sooner or later he will reach the limit of possibility, the saturation point in a given area. Then someone—be he legislator, or philosopher, or agriculturist, or engineer, it makes little difference—must settle the problem of feeding new generations in one of two ways: by extending the "garden" of a nation by migration, peaceful or otherwise, or by putting a def-

inite limit on population increase. There are those, of course, who would advocate warfare as a "natural" method of limiting population, but all the evidence of science, and all the teachings of Christianity rise up in protest against such a philosophy.

OVERPOPULATION AND FAMINE

Famine, in China, is due directly to two causes: flood and drought. Indirectly, the causes of famine have their basis in overpopulation. Rivers overflow because they become filled with silt washed down from the mountains. There are few or no trees to prevent a run-off of rain water. Man has denuded the mountains in order to secure firewood or to plant on the slopes. Scarcity of land, caused by overpopulation, impels man to this unscientific denuding of the mountains. In America or Europe, under drought conditions, food would be imported from other states or nations. But in China there is little surplus money and little surplus food.

And so, because of overpopulation, millions die from famine in times of drought or flood. Nature's method of keeping the population down? But civilization is man's control over nature—and the elimination of the cost and pain of such "natural" methods. Again we come to the same conclusion: before long some scientific and humane, and therefore Christian, way must be found to eliminate famine by eliminating its cause. There are those who maintain that banditry has its root also in overpopulation and consequent hunger; that the farmer who turns bandit—and a large proportion are rural inhabitants—does so not because of

his desire to rob, but of the fundamental desire to feed his family at any cost.

With the direct causes of famine the trained agriculturist is vitally concerned. His scientific knowledge, properly applied, can do much toward preventing the severity of a drought, and toward lessening its heavy toll of human life. And his knowledge may be said to be now sufficient practically to prevent floods from occurring in most localities of China. Floods—the other cause of serious famines—can be even more certainly prevented by science than can drought. A flood is more likely to be an act of man than an act of God.

“China is far from being a treeless country, as some people have been led to believe,” Professor Buck explains. “Forests are frequently found in sections of the country not usually visited by tourists and writers of books on China. Some are practically virgin forests. Some are being cut down, as in the northern part of Shansi Province, and the steep hillsides planted to crops. After a few years the good soil has washed down, and the slopes are left unproductive. The ground is then abandoned and left slowly to regrow trees until the process is again repeated. While hills and mountains of large parts of provinces are unwooded, most of the villages have many trees, just as farmhouses in the United States usually have trees around them.

“Forests do not make it rain, as many people believe. Forests are found in humid regions because of a favorable climate, not because they make the climate. Much of North China is in a dry climate, and it is a question of how many of its northern mountains

can be forested to an advantage. Forests do not grow well with less than an annual rainfall of fifteen inches. However, a forest cover on the mountain would help to prevent a run-off of water. It would also prevent erosion, which is responsible for much of the silt now carried by the Yellow, Yangtze, and other great rivers of China. It is this silting of the beds of rivers and streams which causes the floods in North China. Forests on the hills would help to decrease the amount of silt washed into the rivers."

THE MISSIONARY APPROACH TO FAMINE

Doubtless every person who reads these lines contributed, personally or through his or her church, to the moneys raised in North America and in Europe to relieve the terrible hunger and suffering of millions of men and women and children in the famine region of North China in 1929-30; or in the region flooded in 1924-25; or in some region earlier stricken by famine. That money went to the very worthy cause of purchasing food—in Manchuria or elsewhere—to feed the starving, to keep people alive until the next crop could be sown and harvested.

For many years the missionary and philanthropic agencies of the West have thus rushed food and other relief supplies to various parts of China upon hearing of famine conditions. But more recently these same agencies have undertaken to prevent as well as to relieve famine conditions. China is a chronic sufferer from famine. "Local applications may give some temporary ease from the pain; nothing but a major operation, however, will reach the root of the trouble and prevent its recurrence." So we find that the mission

universities, cooperating with various philanthropic and social organizations, are studying the agricultural needs of this great nation, experimenting in the cultivation of crops and in the breeding of native animals, teaching hundreds of young men the most modern methods of scientific farming and sending them out into the countryside to teach agricultural classes, to give demonstrations before groups of farmers, and to plant trees on the bare hillsides.

Yenching University in Peking, Fukien University in Foochow, Lingnan University (formerly Canton Christian College), and the University of Nanking have schools of agriculture and forestry that have undertaken to prevent the recurrence of famine conditions by a scientific development of agriculture. They are experimenting, too, along many diverse lines for the improvement of crops and for the better breeding of native animals.

A NEW IDEA IN FAMINE RELIEF

In the earliest years of the present century Joseph Bailie was serving in the University of Nanking in the rather prosaic roll of professor of mathematics. Then in 1910 came one of China's periodic famines, and Professor Bailie was one of a group of missionaries giving food daily to some one hundred thousand victims of famine in and around Nanking. Many lives were saved, many lost.

But the mathematics teacher was looking beyond the age-old expedient of feeding the hungry. Why is there famine in this fertile land? How can it be prevented? Soil erosion, which filled the rivers with silt and led to overflowing of the banks, was the immediate

cause, he determined. Planting trees to prevent erosion will stop floods, he reasoned. And then he set to work. Of course he could not plant trees on every Chinese hill, but he could make a demonstration. A company of men, who hitherto were receiving doles of rice from famine relief agencies, were taken and put to work, first in scientifically planting farms on the slopes of Purple Mountain near Nanking, then in carrying good soil from the bottom of a nearby filled-in lake and literally plastering it upon the more barren spots of the mountain top. Upon this soil were planted thousands of young seedlings—locust, pine, walnut, maple, pear, apple, persimmon, peach, plum, fig, cherry and many others that have since grown to maturity. Five years later many happy and prosperous families were living on farms on the mountain slopes, and a forest was proclaiming a new agricultural gospel to the countryside.

In the beginning of this experiment and demonstration upon Purple Mountain, Professor Bailie secured permission from the University of Nanking to start a course in agriculture and forestry. From this single class there has developed the present College of Agriculture and Forestry with a faculty of more than one hundred trained Americans and Chinese. This first class of Professor Bailie's was taken out to Purple Mountain. Blisters raised on their hands, unaccustomed to manual labor, depleted the class to seven members. It is interesting to note that of those seven Chinese agricultural pioneers one is the acting head of his alma mater's Department of Extension, and a second is editor of the same department's agricultural paper. One is head of the Department of Rural Edu-

cation in Southwestern University; another is teaching agriculture in a national normal school; and still another is devoting his life to the improvement of the cotton plant.

A grant of seven hundred thousand dollars from the China Famine Relief Fund, as well as generous support by various missionary boards and individuals in America, has enabled the College of Agriculture and Forestry at Nanking in recent years to carry on a wide range of activity and experimentation. Notable among its achievements has been a plan of cooperation with the College of Agriculture of Cornell University, Ithaca, New York, whereby professors of the American institution are loaned to Nanking for the carrying on of various studies, principally in the field of plant breeding and improvement. There is close cooperation also with the Department of Agriculture in Washington, D. C., and a constant interchange of information and counsel.

PLANT AND ANIMAL IMPROVEMENT AT NANKING

The College of Agriculture and Forestry, University of Nanking, cooperates with various organizations in China: with the International Committee for the Improvement of Sericulture in China in the production and distribution of improved silkworm eggs; with the Chinese Foreign Famine Relief Committee, Shanghai, in the study of the Hwai River watershed; with the Mass Education Movement, Peking; with the China National Christian Council, and with many other Christian bodies in China. It cooperates also in plant improvement projects at nine institutions.

Perhaps the College of Agriculture and Forestry

has made no more valuable contribution to the well-being of China than its promotion of Arbor Day, with the planting of trees by school children and with such other observances of the day as we have in America. More than a million seedlings were sold at a cost of a penny a tree in the early days of the school in order to convince the doubting people that the hillsides could be made to flourish once more. That demonstration has been so successful that from all parts of the country there come requests each year for the purchase of young trees.

Under the direction of Walter Clay Lowdermilk, Ph.D., professor of forestry research, an important study in determining what the science of forestry may contribute to the prevention of famines in North China and Central China was carried out in 1929-30. The results of this study have been made available to the Chinese government, provincial governments, and other interested famine relief agencies. Professor Lowdermilk thus summarizes his conclusions: "The finding in its simplest terms is: that the barring of a soil to the full force of rain of intensities over one-half inch per hour permits run-off to become muddy. Suspended soil particles of the muddy flow are filtered out at the surface to form a thin layer of finely ground material which tends to seal up the soil, and thereby to reduce the rate of penetration of water into it. It thus destroys the natural percolation of a soil containing seepage channels whose openings are protected from sealing and clogging by the natural layer of forest or shrub litter on the surface. The forest litter is the most important part of the forest, not in absorbing rain, but in preserving and protecting the natural

porous condition of the sheath of soil on a landscape." This is a new scientific concept of the place of the forest in the control of water and erosion. Its application will mean much in future famine prevention in China and elsewhere the world around.

In the fall of 1919 the College of Agriculture and Forestry made a selection of twelve thousand five hundred individual cotton plants near Shanghai that looked unusually promising. Among them was one plant that, when studied in the laboratory, proved to be unusually excellent for Chinese cotton. The seed of this plant was sown the next year, and seven plants were grown from it. In 1924 the quantity of seed produced from this one plant was enough to plant thirty-four acres—the best Chinese cotton in all China. Before 1923 no farmer in Wukiang area had ever heard of improved cotton. But the college rented a piece of land and placed one worker in that district. Part of his time was spent in teaching a rural school and part of the time was spent in looking after an experimental farm of twenty *mow* (three and one-third acres) and at the same time he was cooperating with eight farmers who were persuaded to use the seed. In the fall of 1924 it took many cart loads of seeds to meet their demands, and in 1925 the college had to hire large junks to ship the seeds to the farmers of that district. This seed is now having wide distribution.

An important phase of the work of the College of Agriculture and Forestry of the University of Nanking (as it is also at the universities in Foochow and in Canton) is the improvement of methods of producing silk. The importance of this industry to China may be gleaned from the fact that Europe is steadily

losing ground in the production of raw silk; that Japan has a limited area upon which to plant mulberry trees, and that in the very near future the whole world, and especially America, which is the largest silk manufacturing country, must turn more to China for its raw material. In the improvement of the silk industry better silkworms must be produced, and there must be better mulberry trees, since their leaves constitute the food of the worm. Pebrine is perhaps the most serious disease of the silkworms, since it often destroys as high as sixty per cent of them. The disease can be controlled by producing disease-free eggs.

Studies in animal and other diseases in China, carried on by the Nanking College of Agriculture and Forestry, have been concentrated on three lines: rinderpest control, poultry disease control, and silkworm disease control. Many important conclusions of practical value were made in the course of these investigations. A method of giving the cattle a preliminary inoculation of anti-rinderpest serum, and then both virus blood and serum, reduced the rate of mortality. Efforts were made during the year of 1924-1925 to make a sort of vaccine by concentrating the serum to dryness. This vaccine was first used with success at Nanhsuchow. In the year 1925-1926, a rinderpest hospital and serum laboratory was erected near the university sericulture building. This will make it possible for the institution to manufacture its own serum and use it more advantageously in the field.

Doctor Charles S. Gibbs, of the Biology Department, has found the important maladies among poultry in China to be chicken cholera, chicken pox, and

vermin parasites. Chicken cholera was found the most dangerous. In the vicinity of Canton he found chicken diphtheria and coccidiosis quite prevalent also. He was able to demonstrate that most of these diseases could be eradicated or controlled by killing the exposed birds and disinfecting the premises. Other experiments by this department have been so successful as to lead to the announcement that the three leading diseases attacking silkworms—pebrine, flacherie, and grasserie—can be controlled; this is an announcement vital to China's silk industry.

The control of the common smut diseases that attack barley, wheat, millet and kaoliang in China, and that often ruin fifty per cent of a farmer's crop, has been one of the most important contributions of the college during recent years. The treatment developed by the Division of Plant Pathology costs but a few cents per acre; it is copper carbonate and is so simple any farmer can apply it. This discovery of smut treatment and its application will in a short time be a great saving to the Chinese farmer.

Eighty-four soil samples were selected by farmers and members of the college, and were studied with special emphasis on the activity of legume bacteria. Pure cultures were isolated and sent to places where the growing of legumes was not successful. Experiments on the relation of native natural fertilizers to the infectiousness of legume bacteria were made. Results indicated that the fertilized pots gave more and larger beans than the non-fertilized pots. The college is therefore advocating that bean fields be fertilized just the same as others, especially by gypsum, which gave the highest result in this experiment.

MODERN TRAINING FOR RURAL TEACHERS

The methods employed by the College of Agriculture and Forestry in passing on to the actual farmers this newly acquired knowledge of agriculture and animal husbandry are of more than passing interest to educators not only in China but in other lands as well.

The distinctive feature of the Rural Normal School of the college is the training of rural teachers for practical forms of community service in addition to the regular tasks in the school room. During his course each student aids in making a rural community survey, takes part in extension work and distribution of pure seed, has practice in teaching night school, education and entertainment of the community through plays and exhibits and daily field work in the school garden and nursery, together with field work in the growing of improved crops.

Four classes of normal school students, a total of seventy-one, have been graduated. They have secured positions and are scattered over twelve provinces, as far north as Fengtien, south to Fukien and west to Szechwan. Thirty-nine of these graduates are directing and teaching in rural schools. The schools are largely supported by the government or the missions, but a number are entirely or partly self-supporting with the earnings from the cultivation of land by the students, or by sharing the profits from cooperative societies organized by the teacher. The college receives frequent reports from the graduates as to the progress of their work and of their problems.

A one-year agricultural course is designed "primarily to train rural agricultural workers so that they

will be able to meet the particular problems in rural communities." Special emphasis is placed on gaining skill in practice by arranging all classroom work in the forenoon and requiring during the afternoon field, garden or nursery operations corresponding to the morning lessons. All courses that are of a general nature are given in Chinese. Besides the regular courses, men interested in sericulture, crop growing and teaching are given special work in these lines.

In order to have practice centers for the normal school students, as well as for the extension of rural education, three demonstration schools are maintained. Part of the work of these rural schools is to have a school garden for the pupils to use for practice in gardening, crop cultivation, and as a nursery.

The Extension Department of the college has charge of the smut demonstrations and of other methods of reaching the farmers with information. It produces about three hundred hand-drawn charts each year. The aim is to make these charts as realistic as possible so that the farmers will catch the idea at a glance. Farmers like to see photographs which are true to life arranged in albums for exhibition. All kinds of specimens in tins, cases, or mounted on paper, or made up in scrolls are found useful and effective for exhibits, fairs or markets in showing the farmers what should be done. Lantern slides are made into sets, such as mulberry tree planting, sericulture, agricultural education, forestry, and agronomy. They are used at evening meetings. Several thousand feet of moving picture films have been prepared and about ten thousand feet have been brought from the United States Department of Agriculture to show to Chinese farmers.

Plays are prepared for country theatres; they depict the farmer's problems and then give the solution. The farmers are always greatly moved by this method. Since there are many farmers who are ignorant and poor, and who have not the knowledge or funds to go to a modern doctor when taken ill, especially with common ailments such as scabies, trachoma, malaria fever or ordinary sores, the rural demonstrators prepare medicine cases and charts and give needy farmers simple remedies or advice.

FRUIT AND ANIMAL RESEARCH IN CANTON

Considerable research work in the agricultural field has been carried on also at Canton, South China, by the College of Agriculture of Lingnan University. The university report of this work states: "Among the special projects at present under way and of great importance to the future agricultural development of South China may be mentioned hog-breeding; development of dairy herds; improvement of rice culture by selection; a study of the disease of the lychee and also of the citrus fruit, of great importance to California and Florida as well as China; improvement of sericulture through the production of disease-free silkworms; an herbarium which exchanges with museums throughout the world. In all this work close cooperation has been established with the United States Department of Agriculture, the Philippines Bureau of Science, the Kwangtung Experiment Station, and the International Committee for the Improvement of Sericulture in Kwangtung."

The College of Agriculture of Lingnan University offers two courses: a four-year college course in prac-

tical and theoretical agriculture, including forestry and sericulture; and a one-year course designed to train students to be farm workers, managers, agricultural teachers, and extension workers. For the second semester the students select one of four fields—animal husbandry, farm crops, horticulture, and sericulture—and specialize in it. Besides classroom work, six hours of practical work each day is required from each student. The college has over one hundred and fifty acres of land under cultivation and has easy access to other farms and to a government experimental station. Special attention is being given to the introduction of new fruits and vegetables in China, to the improvement of rice and fodder crops, to fertilizer experiments, and to improving indigenous stock and poultry. Like Nanking, the college at Canton has a strong department of sericulture.

At Yenching University in Peking and at Fukien Christian University in Foochow, many of the same needs of Chinese agriculture have been studied, and somewhat similar teaching and extension methods have been developed to give the farmers the benefit of this new knowledge.

IMPROVING RICE AT FOOCHOW

At Fukien Christian University attention has been particularly directed toward improving the rice crop. Since rice is China's staple food, any improvement in the breeding of the plants is of course highly important.

"In our experiment 541 rice seedlings were taken at random from a seed bag and set out in the experimental field, each plant being placed by itself and not

in a hill with three or four others, as is the custom among the farmers here," says Professor C. R. Kellogg. "This was, of course, to make possible individual studies on each plant. The farmers were very much amused at the proceedings, prophesying that the single plants would not grow.

"Among the 541 plants examined in 1927, the lowest one produced 184 kernels and the best one 1,551 kernels, with an average of 588.18 kernels per plant. The weight of 100 kernels from the poorest plant was 2.12 grams and from the best plant 3.25 grams, with an average of 2.85 grams per 100 kernels. Seeds from the ten best plants were set aside and kept for planting the second year.

"During the second year (1928) the seeds from the previous year's selection were planted in rows, one row for each selected plant.

"During the third year (1929) the seeds from each selected plant were planted in separate plots and harvested separately. Ten plants from each plot were preserved for study and the rest of the seeds put aside for planting next year in larger plots.

"The results of this third year of selection are very interesting. A number of unselected plants taken from the fields near here were planted in a plot in the same field with the selected ones so that all plants had the same conditions of soil, fertilizer, rainfall, etc. At the summer harvest time ten plants from each selected plot and ten plants from the unselected plot were taken to be examined. The average number of kernels per plant from the ten selected plots was 1,500.6 kernels, while the average of the ten plants from the unselected plot was 1,058 kernels. The total

weight of rice seeds produced by the ten selected plants averaged 34.60 grams per plant, while the average produced by the unselected plants was 25.90 grams. In other words, after three years of selection in a very limited way the selected plants produced 42.7 per cent more kernels (in number) of rice per plant than the unselected plants raised in the same field and under the same conditions, and 33.3 per cent more actual weight of rice seeds. The difference is unquestionably due to the selection and not to the environment.

"Our plan now is to get the village preachers and teachers interested in this work in the hope that each village where there is a preaching place or school may prove a center for the selection of local varieties of rice that will be much more productive than the present material."

CHINA'S MASS EDUCATION MOVEMENT

It will readily be seen that one of the great problems in China is the development of a plan and machinery for presenting to the individual farmer the facts and discoveries found by such technical research as that carried on at Canton or Nanking. There is a deep gulf—a gulf of illiteracy and ignorance and superstition and centuries of custom—that must be bridged between the agricultural college professor, Chinese or Occidental, and the struggling cultivator of three acres. Some of the methods of the college have been suggested: travelling demonstrations, cooperating individuals, schools, and other institutions, short courses, extension courses, the printed page, seed distribution.

One of the most hopeful and far-sighted schemes for lifting the whole rural life of China, including its agri-

cultural knowledge and practice, had its inception and inspiration in the mind of Y. C. James Yen, an American-trained Chinese Christian educator. Dr. Yen is the father of the "Thousand Character System" of combatting illiteracy, out of which has grown the Mass Education Movement. He developed this system under the auspices of the Young Men's Christian Association. Briefly stated, Dr. Yen has selected one thousand Chinese characters—those most necessary to the average Chinese as he goes about his business, his home life, his association with others in his village or town. These characters are taught in Village People's Schools which have been organized in many parts of the country, those for farmers being in the off-season. It takes only a few weeks for these schools, through voluntary teachers, to teach the thousand characters—removing the basic barrier of total illiteracy.

With this foundation the student is led, as far as he has the time and desire, into further reading and study on agriculture, irrigation, family budgeting, health, care of children, and many other topics. Many thousands of individuals have had their whole lives reshaped through these schools and the new knowledge gained. And the idea has spread far and wide. Local governments are cooperating and organizing such village schools. Missionary schools and individual missionaries are teaching the characters and organizing schools. A newspaper, *The Farmer's Paper*, is published in this "Thousand Character" writing; its columns give the farmer, every ten days, news items, agricultural articles, articles on health and sanitation, stories, folk-songs, letter-writing lessons. This whole

movement, developing and spreading from year to year, is full of promise for the future of rural China.

THE GOVERNMENT EMPHASIS ON AGRICULTURE

The national government of China is keenly alive to the agricultural and rural situations throughout the country. A part of the government's program is to put into concrete form Dr. Sun Yat Sen's "third principle," the reorganization of society so that each person may have a living. That principle, applied to the farmer, is a tremendous undertaking.

But the government has to date been handicapped by civil strife, lack of funds, lack of complete and continuous organization, and also by the intense individualism of the Chinese farmer, as mentioned previously. However, agricultural betterment is "in the program," and peace and stability will see greater efforts toward its accomplishment. Meanwhile many individual government officials, many local and provincial and town officials, and many local organizations have been sympathetic and cooperative toward agricultural enterprises carried on by missions and educational institutions. They have cooperated with the experiments and demonstrations of colleges and secondary schools, and with the Mass Education Movement. Recently a large number of rural organizations have been formed, at least with the consent if not with the actual aid of the government. These include the farmers Unions, communistic in conception, and the Red Spears, Big Swords, and Little Swords, in which the farmers are uniting against oppressive taxes, banditry, and other evils.

The China International Relief Commission has been

cooperating with the government especially in the promotion of societies for cooperative rural credit and for savings. This is part of a large program of famine prevention—a program which includes also reforestation, control of rivers, reclamation of inundated lands, improved farming, improved marketing, improved transportation, and a reshaping of curricula in rural schools to meet the farmers' practical needs.

But no matter how efficiently or how extensively the government may carry on agricultural teaching, there is still a major task for the missionary agriculturist. Somehow the Chinese farmer—and indeed the American farmer also—must be led to realize the sacredness of his high calling. The farmer is a direct cooperator with the Supreme Being of the universe in carrying out his plans for mankind; God does his work to a certain point, the producer of food and shelter must carry on from there in the divine undertaking. The missionary task in rural China is not to make farming an entering wedge for the teaching of Christianity, but rather to make good farmers—good fellow-producers with God—good servants of the highest needs of human society—and therefore good Christians.

CHAPTER IV

JAPAN AND KOREA: THE DRIFT FROM FARM TO FACTORY

THE islands of Japan and the nearby Korean Peninsula (Chosen), jutting southeast from Manchuria and Siberia—a corner of Asia, small in area but bulging with people—share the rural and agricultural distress that is prevalent everywhere in Asia. While Japan proper is becoming highly industrialized, most of the people are still rural. Here, too, many people are trying to raise their food and the material for their clothing and homes upon too small an area of farmland; here but a small proportion of the farmers own their own lands, while rents are high, taxes are excessive, and whole families and whole communities have gone deeply into debt for the very essentials of living; here women and children—who should be in their homes or in school—labor to eke out a meagre existence; and here the majority of the farmers know but little of modern agricultural science.

Japan proper has an area of one hundred and forty-eight thousand seven hundred and fifty-six square miles, and within that territory live sixty-three million people. That is as if half the population of the United States lived and farmed in an area smaller by ten thousand square miles than the state of California. Because Japan is located on a number of islands with a great coastline, and because of her numerous mountains, only about one-sixth of the land is tillable—and

much of that only with the greatest of labor and care. This means that the average farm family has about two and seven-tenths acres—and more than half of this acreage is in rice fields.

The peninsula of Korea, now a constituent part of the Empire, is eighty-five thousand two hundred and twenty-eight square miles in area, housing and feeding about twenty million people. Korea is thus just a little larger than Minnesota, but has eight times that state's population. Eighty-three per cent of Koreans are directly engaged in agriculture and forestry. Like his Japanese brother, the Korean farmer tills about three acres of land, and half of this is in rice paddy-field. While Korea's population is two hundred and five persons per square mile, the population per square mile of tillable land is one thousand one hundred and twenty-five.

The increase in population in Japan and Korea, estimated as one million persons per year, is a cause of great concern not only to Japan herself but to other peoples in the Pacific Basin who feel that Japan must sooner or later break out from within her confining walls. Some little relief has come with migration into mandated territory and into Korea, though it is worthy of note that only four hundred and twenty-five thousand Japanese have found their way into the Peninsula, and more than ninety per cent of these are engaged in commerce, transportation, public service, and other non-agricultural pursuits.

On this phase of the problem Motojiro Sugiyama, a leading Japanese rural authority, says: "Emigration to sparsely settled districts inside Japan proper has been planned and encouraged; and emigration to for-

eign countries is actually though gradually taking place. But all this possible emigration is only as a drop of water to the great ocean. The ever-increasing rural population cannot be disposed of by an emigration policy."

This increasing population and the smallness of farms have made the Japanese and the Koreans cultivators on a very intense scale. But it has produced evils that no amount of intense farming can seem to overcome: heavy taxes, high rents, and exorbitant rates on farm loans; and this has spelled poverty to the farmer.

GROUND RENT AND TAXES IN JAPAN

According to Mr. Sugiyama, the general rent for rice fields in Japan is fifty per cent of the crop, and that of other farm lands is from thirty per cent to forty per cent. The system of share-farming exists in Europe as well as in Japan. But in Europe the landowner furnishes the fertilizer and the tools, and he does not receive nearly as much as fifty per cent of any crop. The Japanese landowner does not furnish fertilizer or tools, so that a charge of fifty per cent of the crop as rent is exceedingly high. Rates of course differ somewhat according to the productivity of the soil itself, but the general standard as indicated above has been established through the years and is rather strictly adhered to by the landowners.

The landowner is therefore unusually powerful, and this power is confirmed by the civil law, which in Japan gives full protection to the owner and comparatively little to the tenant. When disputes arise between the two parties, the landowner has recourse to a

law which permits him to forbid the tenant to cultivate the land; this is equivalent to an industrial lock-out, and works great hardships upon any tenant who incurs the displeasure of the owner. This land problem—the central issue in rural communities—becomes with the years more difficult of solution. If the tenant were protected by an equitable law, his troubles would be far from ended. Even if the land he now hires became his own property, the fact of his poverty and the poverty of his whole family would remain; because under the best of conditions a family cannot live sufficiently well on the products of two and seven-tenths acres.

"It would be necessary," says Mr. Sugiyama, "to cut down the farming population to about half of what it is at present, in order to make it possible for each farmer properly to sustain his family. As this is practically out of the question, the only thing that can be done is to develop industries in rural districts, withdrawing half of the population from farming for this purpose. Such a development of industries is actually taking place in many districts."

The very poverty of the farmer drives him to borrowing; and borrowing invariably makes him the poorer; and when a large proportion of the community or a countryside become indebted, they are the more easily the prey of the money-lender. Such is the grinding of the wheel that crushes the Japanese farmers—as farmers elsewhere in Asia.

According to the survey of the central government of Japan, the indebtedness of farmers on movable and immovable property was one hundred eighty-nine million dollars in 1910, but by 1925 it had reached

the sum of one billion two hundred million dollars. That is, their indebtedness had increased six-fold in fifteen years. Not only that, but if to this sum is added credit loans, the total will amount to at least two billion dollars at the most conservative figure. This means an average indebtedness of at least three hundred and seventy-five dollars per farm family—an enormous burden when one considers the size of the farms, their equipment, and the smallness of their yield in crops.

THE AGRICULTURAL LABORER IN JAPAN

The farms of Japan are so small that few farmers can employ laborers in addition to members of their immediate families. Yet, according to the census, there are more than three million persons so employed, of whom one million eight hundred thousand are day laborers, nine hundred and twenty thousand are seasonal laborers, and only three hundred and eighty-five thousand are employed the year round.

“As these farm laborers live together in families, the suffering caused by unemployment or slack times is not as great as a similar situation among city laborers,” says Mr. Sugiyama. “But, taken altogether, the need for redress is quite as great among rural laborers as among those in the cities. The reduction of working hours, and health insurance, for example, are needed as much in the country as in the city. And child labor, and the labor of women just before and just after child-birth, are especially urgent problems in the rural districts. The extreme economic depression of the farmers makes it necessary for a large number of children of school age to be at work. Child

labor is worse in districts where there are handicraft industries. Children in the cities are protected by the provisions of the factory law, but there is no such restriction in the rural districts. Nor is there any organized protection in the country for women at child-birth. A movement for the protection of mothers before and after child-birth is a paramount necessity in the rural districts."

Mr. Sugiyama points out other evils of this situation in rural Japan: that some three hundred and thirty thousand girls are being sent every year from the farms to the factories in the cities; that because the girls go to the cities, the young men of the farms complain that they cannot find suitable life companions in the countryside, and they too drift cityward when opportunity comes—thus making the farming sections the abode of the old; and that because of their poverty many rural Japanese families sell their innocent daughters to be prostitutes, waitresses, or geisha girls in the cities.

"Modern culture is city-centered," says Mr. Sugiyama in speaking of conditions in Japan. "There is practically nothing that can be called culture in the country. And this fact makes it impossible for even the young people who have the vision of country life, to remain in the rural districts. There are, for instance, almost no physicians or hospitals—no easy and safe means for obtaining medical treatment. There are no provisions for recreation. And since the means for the abundant culture they desire are lacking, rural residents are a prey to dissatisfaction and unrest. Therefore the young people are driven to the cities. And in consequence the creative energy of the villages

is decreasing, and their life is more and more destroyed."

A FEW LANDLORDS OWN KOREA'S FARMS

Dr. Edmund deS. Brunner recently made an extensive study of the rural and agricultural situation in Korea. He reported to the Jerusalem Meeting:

"More than seventy-five per cent of the Korean farmers must deal with landlords. Of the landlords about one-fifth rent all their land. This fifth owns more than half the arable land of Korea. The rest cultivate some and rent the remainder. To judge from the figures, it is the part-owner who is slipping back into full tenancy. There is more ownership in the north, more tenancy in the south. In the four northern provinces and Kogen, thirty-seven and seven-tenths per cent of the farmers are owner-cultivators and only twenty per cent are full tenants. In the eight southern provinces thirteen per cent are owners and fifty per cent full tenants. In the thirty-five communities studied, one-third of the northern farmers were found to be owners; one-sixth of the southern; and one-fourth of those in the villages of the central provinces.

"This problem is undeniably serious. It is proverbial that the man who holds a stake in the land he tills is more enterprising, more interested in his community, more socially stable than the tenant. Increasing tenancy among the farmers is likely to affect adversely the contributions to the church both of money and of time.

"The problem of tenancy in Korea is not new. It has been for several centuries the curse of Korean rural life. A relatively small number of 'Yangban'

families exploited the nation to their own advantage, and it is the legacy from this situation that is affecting the economic status of Korea far more than the alleged fact that the land is passing not only from the control of the Korean farmers but from the ownership of the Koreans and into the hands of the Japanese. . . .

"But the consideration of the greatest importance in the long run is not how much land is owned by Japanese or Korean landlords but rather the lot of the Korean tenant. . . . The legal division of crops between landlord and tenant is fifty-fifty, and this is usually adhered to in the north; but the tenant supplies not only all the labor, both of animal and of man, but usually all seeds and fertilizer, and pays the taxes as well. In most countries, half or all of these items, except the tenant's labor, is considered a legitimate part of the landlord's overhead expense."

It is estimated that the Korean farmer's taxes are from eight to ten per cent of his income, though some of it, under Japanese guidance, has gone into projects of reforestation and irrigation that should, in the long run, help agriculture.

In the matter of debt in rural Korea, Dr. Bruner says: "The amount of debt existing at the present time would not be so serious were it not for the interest rates, which range from twelve to forty-eight per cent and, in rare instances, are higher still. Rates below twenty-four per cent were available only to members of village cooperative or thrift guilds; and the latter lend only on good security, which most tenants lack. Given these interest rates and the present price level, it is a simple matter to figure out that only an exceptional household can extricate itself from a debt of

one hundred yen (fifty dollars) or more. It is this, coupled with the high price of land, that makes it so difficult for the Korean to step from tenancy to ownership."

The Rev. Charles A. Sauer, missionary in Kongju, Korea, is authority for the statement that there is marked dissatisfaction among both Japanese and Korean farmers with present government irrigation projects. It is pointed out that the usual project receives from twenty per cent to twenty-five per cent subsidy from the Japanese government and is expected to pay for itself in forty years. The result is that water rentals are high. The forty year refund plan was based upon an estimated income of six dollars per bag from the rice crop. Increased production, plus certain bumper crops of rice in Japan—eliminating all exports of rice from Korea to Japan—have so reduced the price received for rice that in 1930 farmers were receiving only three dollars to four dollars per bag. As a result the farmer has been unable, in many cases, to pay his water rentals; in other cases he has been so crushed financially that he has been forced to sell his land—usually to a development company financed largely by Japanese.

SIX PROSPEROUS KOREAN VILLAGES

Must the Korean, or Japanese, village remain in its present state of poverty, or can it rise above that poverty? Are there prosperous villages? What made them prosperous? Can others do the same? Where and who is the leader to guide the village to the better day and the better way? In trying to find an answer to these questions, Dr. Brunner found in Korea six

exceptional villages—six “redeemed” villages—that are showing the way out of the Slough of Despond. And in each case a single man, a Korean leader of more than ordinary vision and ability, has been the cause. Dr. Brunner thus tells the story of two of the six villages:

“The village of Torin-ri, Koshui County, South Zenra Province, has a population of three hundred and twenty-one in sixty households. It has had the same headman since 1902, and much of the success of the community is traceable to his leadership. In 1919 a Village Betterment Association was formed which meets every month and discusses community affairs and better methods of agriculture. That the discussions have had practical results is everywhere apparent. The houses are larger than in the typical village, and the roofs of many of them are tiled. The yards are larger and cleaner than those usually found. The yield of rice has doubled in the last two decades. By 1926 it averaged forty-five *koku* to the *hectare* (one *koku* equals five bushels; one *hectare* equals two and forty-five hundredths acres), and the 1927 yield was about fifty *koku*. This village has its own mark on its products, which have come to be recognized as of superior quality and often sell at a small advance over the market price. The products are sold through the Betterment Association on a cooperative plan. This association owns a sort of community house, formerly the saloon, which it bought out; and it was just completing a large storehouse at the time of the survey. Prosperity has produced more and more landownership. Of the sixty households, twenty-eight are those of owner-cultivators; eighteen those of part-owners; and

fourteen those of tenants. Only one-fifth of the land is in the hands of landlords.

"The motto of the village is 'Work'; and the fire-gong is tapped each morning at six, when the people are supposed to get up and begin the day's tasks. Able-bodied relatives who visit the village are entertained for a day and a night, 'and then if they do not work, they may not stay.' Five young men from the village are studying agriculture; five young people are in high or normal school; and two girls are studying sericulture.

"In the same province another community has advanced itself from nearly one hundred per cent tenancy to ninety-two per cent ownership in six years by planting high-grade cotton and by cooperation.

"In the village of Kayo-ri, in Keiki Province, the impetus for better things has come through the women, influenced by the school principal. Stimulated by a subsidy of fifty per cent of the initial capital necessary, they formed, in August, 1922, a poultry association which now has one hundred and nine members and has earned eleven thousand *yen* (five thousand five hundred dollars) since organization. The funds of the association are lent to villagers at ten per cent interest. Dividends have been applied to buying land or cattle, or to improving the homes. The women have also taken a stand against the old-style method of washing; because they are so busy with chickens and silkworms, tubs and soap and washingpowder have appeared to facilitate their household tasks. The villagers also make straw bags.

"This village also has a Village Betterment Association and a Young Men's Association. The latter is

responsible for the annual clean-up day. It repaired a bridge when it was damaged by a flood; and when an epidemic broke out in a village nearby patrolled day and night the roads leading to Kayo, stopping all traffic. There were no cases of contagion in the village.

"Here, too, the bell is rung at 6 A. M., and also at noon and at 6 P. M. The school is responsible for this. One of the evidences of prosperity is that all but thirty-six of the one hundred and eighty-five of school age attend. Indeed the school has an excellent farm, the best the author saw in Korea, where the pupils work under supervision. Promising graduates continue to receive assistance in agricultural work. There is a night school, and its graduates, as well as those of the day school, have formed a reading club and circulate magazines and newspapers.

"In another village in the same province, the discouraged headman, after describing the growing poverty of his community, said: 'This civilization is worse than uncivilization.' In the two successful villages studied, the headmen, both past sixty years of age and two hundred miles apart, answered the question as to whether times were better than twenty years ago, in the same words: 'It is better to live now than in the days long ago.' In proof they pointed to the social gains that had followed economic progress. For them and their communities the future held hope and their test of life was not its riches but its richness."

THE KINGDOM OF GOD MOVEMENT

"The Kingdom of God Movement," inaugurated in Japan by the famed evangelist, Toyohiko Kagawa, has

as one of its principal objectives the amelioration of the economic, social, and religious conditions under which thirty million rural Japanese live. Kagawa points out that millions of the rural people are discouraged, fighting a losing fight with poverty; and that forty per cent of the smaller towns are still unevangelized, while in only thirteen out of thirteen thousand rural villages are there Christian churches. The movement seeks to extend—largely through volunteer workers—the gospel and the principles of better farming and better living to these communities. It plans to gather selected young men and young women from the farms into short-term Farmers' Gospel Schools, and to train them for what might be called home mission service as Christian community leaders—leaders both spiritual and economic. One of the organizations growing out of Kagawa's interest in the farmer is the Japan Farmers Guild, which attempts to spread agricultural knowledge and to organize cooperative loan societies. Assisting Kagawa in forming this organization were Motojiro Sugiyama, already quoted, and the Rev. Mr. Ogawa, of the Japan Methodist Church.

A PIONEER RURAL CHURCH

A church that has done considerable pioneering in the field of rural service was conducted for thirteen years—thirteen years of persecution and success—by Mr. Ogawa at Sakashita, a village of two hundred houses nestled among the mountains of Gifu Prefecture. It was inspired and organized by a retired Japanese physician. He was born in this village, was graduated in medicine at De Pauw University, converted to

Christianity, practiced successfully in Hawaii, and then retired to his native village. Here he worked for the establishment of this little church. In relating the story of these trying days, Mr. Ogawa says:

"Shortly after going to the village I realized the great need of a nursery, for the death rate among children was very high, the children being neglected all day long by the busy farmers. Since there was no money at all for such an undertaking the pastor had to do everything himself, from teaching handiwork to the older girls, games and songs to the younger, to the wiping of noses and the mending of wooden clogs for the kiddies. In Japan it is very rare for a teacher to do little menial jobs even for children, so the people were surprised and delighted. Through this nursery I came close to the homes and the parents, and the old opposition and hatred turned to love for the pastor.

"There wasn't a physician in the whole district and because it was so expensive to bring one from such a distance and the people were so poor, they practically never called a doctor unless someone was actually dying. They didn't even have midwives at child-birth, and because of their ignorance and carelessness the rate of stillborn and the death rate among babies were unbelievably high. I felt very strongly that the church must accept the responsibility for this and try to overcome the condition, so I formed a 'Nonoyuri Kwai' (a Lily of the Valley Club). There were about three hundred members and each had to pay about five cents a month. Some who could afford it paid more. Twenty dollars a month went toward the salary of a resident doctor and five toward a midwife's.

"The farmers, when busy, were very busy, but during

the winter months they had a long vacation. During this leisure time they drank *sake* and went to places of ill fame. They whiled away their time and wasted their money. I felt that it was the duty of the church to help these farmers to use their time in a profitable way and by so doing prevent much immorality; so we opened in the church a 'Farmers' Leisure Time School.' I went to the Prefectural Headquarters and explained the conditions in and around this village, and they became interested and sent three experts from the office as teachers for the school. These three teachers gave their services free of charge. Fortunately two of the three were Christians and the other one had attended church and understood somewhat the principles and teachings of Christ. The governor gave fifty dollars. Each member brought rice which the women cooked, while the men drew water and did the heavy work. The teachers ate and slept with these rough farmers, which greatly surprised and pleased them.

"The first thing in the morning we had devotions, then the pastor taught a Bible lesson. After this the prefectural officers had classes on the study of the soil, agriculture, fertilizer, etc. Just before lunch the pastor taught hymns, and in the afternoon they had manual training and learned how to make simple tools for their work, tables and trays and various kinds of toys. In the evening there was either a good lecture, moving picture, or recreation. Some of the more educated, wealthier women came in from a neighboring town and taught sewing, cooking, knitting, and flower arrangement to the women.

"The people in and surrounding this village were so poor that I felt it necessary to make an investigation

of economic conditions. . . . To my great surprise I found that the actual income averaged only sixty-six dollars per year per adult. About one-half the people owned their property and so had to pay relatively high taxes to the government out of this small amount. The majority were hopelessly in debt, and all were in a most deplorable state of economic despair. I had two plans to meet this problem: to preach the gospel of hope as I had been doing, and to teach them methods of cooperation to meet their common economic problem.

"To this end I travelled around every evening, visiting their homes, and explaining brotherhoods and guilds as operated in Holland. At first they were so sceptical that it was difficult to get the guilds started. But finally we started four cooperative guilds: a Producers' Cooperative, a Credit Cooperative or Credit Union, a Consumers' Cooperative, and a Marketing Cooperative. The office of these guilds was in the church, and mainly Christians were elected as officers. They sold the rice and articles direct so that the money went to the farmers. The farmers became their own bankers and lent money to each other at a very low rate of interest. They bought their fertilizer in large quantities from where it was made. They bought machinery together and used it in turn; and in the same way their horses and cows were used. The cost of milk fell from ten *sen* a pint to two *sen*. Of course this helped to solve the infant mortality problem. The economic, health, moral, and spiritual conditions greatly improved in a surprisingly short time, and these farmers were really happy for the first time in their lives."

Within nine years the church in this village became entirely self-supporting. And Pastor Ogawa was finally elected as the headman of the village.

THE EXPERIMENT AT MINABE

In the little fishing-farming village of Minabe, in Wakayama Prefecture, there has been in progress a Christian rural village experiment that is attracting the attention of all Japan. It is being carried on by Kagawa, and under the immediate leadership of Sotohiko Masuzaki, an experienced evangelist-farmer. Back of this village experiment is an almost illiterate Japanese truck gardener, a son of this village, who supports his family on a twenty-acre farm in California. When Kagawa was in California in 1925, this Japanese farmer was touched by the evangelist's message and proposed a partnership whereby his native village would be served by a Christian pastor. Each year he has faithfully saved from his profits enough to continue this service to Minabe.

Mr. Masuzaki went to Minabe as a "local evangelist, and at the same time a special experimenter and demonstrator of methods of rural work." Writing of his experience in Minabe, he says:

"At first there were only four comrades, and in the years there have been all sorts of ups and downs. But now we have Sunday schools in three places, a home-study club every Wednesday evening, and a Sunday service with twenty-four or twenty-five in average attendance. We have over two hundred books of all varieties in the library.

"We use leisure periods and waste materials, such as can be gathered at home or in the fields without any

expenditure of money. There are six in the young people's handicraft class, and eleven in the boys' and girls' group. We have a reading club, a discussion club, and a local branch of the temperance association.

"We have lectures to the students in the local agricultural school, a Bible class on Sunday morning for agricultural school students, and a special worship service for them. On Saturday we have a club for high school girls attended by about nine. Twice a month we have a meeting for young women seeking to become Christians; this is the 'Bethany Club.'

"Aside from the work in the settlement at Minabe, we have work with the Water Level children in a nearby village composed entirely of Water Level people (formerly called outcastes). This school includes two hours of handicrafts and an hour of Bible study weekly. The handicrafts are of fundamental importance in the effort to get children away from the socially degrading occupations of their parents.

"There is free hospital and maternity care.

"There are many problems in the farming and fishing villages not found in the cities, such as the tragic selling of a sixteen-year-old girl for thirty *yen* (fifteen dollars) because of the desperate poverty of her family, and because of her parents' ignorance and unawakened moral character. Others, like Jean Valjean, steal to relieve their poverty.

"When Dr. Kagawa visited us last June, fifteen were baptized by him, including the principal of the Girls' High School, other responsible citizens, and an old lady who came in from the country, having walked twenty-seven miles, all the night before, to reach the service in time.

Kagawa is eager to have many more villages served by practical Christian pastor-demonstrators, such as those at Sakashita and Minabe. He calls a rural settlement "the modern equivalent for a monastery." In monasticism there was the withdrawal to a quiet rural district, and the systematic effort to serve its community while engaged in religious devotion. Whether or not the ascetic element be included, Kagawa would have rural settlements multiplied until they dot the landscape of Japan as the old monasteries redeemed and glorified the European countryside.

SOME RURAL DEMONSTRATIONS IN KOREA

While the Christian churches in Korea have here and there made some attempt to improve the conditions under which rural peoples work and live, yet, generally speaking, the local rural church program has been the conventional one of Sunday services, Sunday school, midweek meeting—and little else. An occasional church school has influenced village life, but the majority of these have taught the three R's rather as ends in themselves. Perhaps the most ambitious program of rural community and agricultural service has been that carried on for more than a quarter of a century by the Korea Young Men's Christian Association. Hundreds of night schools have been opened in the villages to combat illiteracy. Persons thus taught to read and write have been enabled to secure extension instruction, largely in the form of literature on better agriculture, better health, better village homes and methods. Boys' clubs, athletic contests, and leadership institutes have served to develop hundreds of leaders-to-be.

The Y. M. C. A. has a small demonstration farm where two types of experiments are conducted: finding new crops that can be grown profitably on the typical Korean farm; and finding more economical and profitable ways of operating the type of farm the average Korean now has. Men have been assisted to start raising peanuts, popcorn, and strawberries, and through the provision of livestock or eggs have been encouraged to enter the dairying or poultry business.

Francis O. Clark, serving the Y. M. C. A. in its rural work in Korea, and director of agricultural experimentation for the Korea National Christian Council, expresses the conviction that the economic conditions of the country can be best improved by instructing the people along lines of diversified farming and more particularly teaching them the best methods of dry farming and stock raising. The emphasis on the part of the government has been largely along lines of improving the culture of rice.

In order to reach the largest number of people possible, Mr. Clark and his associates conducted in a recent winter twenty-one farm schools of ten days each to which the farmers were invited. These schools were practical in nature; one-half the time was spent in lectures, one-fourth in actually demonstrating how to improve soil, make and use simple farm machinery, select the best seed, judge stock, etc. Four teachers started one school, while four others began the second. At the end of five days they exchanged schools. The topics of the eight farm experts—four missionaries and four Koreans—included dry farming, soils, fertilizers, crops, horticulture in its various phases, bee-keeping, animal husbandry as applied to Korea, and

various phases of farm management, financing, marketing, and home industries.

There was a paid attendance (five cents a day) of four thousand two hundred and eighty and an estimated attendance at night meetings of more than forty thousand. Many walked from twenty to fifty miles, carrying bedding and sufficient rice to last ten days. The faculty selected from this large group forty or fifty who will carry on definite farm projects from 1931 to 1935. These farmers are expected to demonstrate improved methods of cultivation, the use of legumes, green manures, and other important crops, giving especial attention to improved methods of planting existing crops in Korea and to the selection of seed for future planting. Those projecting this training hope that these demonstration farmers can be increased in number during the coming years.

"Everywhere we go in Korea," says Mr. Clark, "the people come out to farmers' meetings in great numbers, anxious to get information on improved farming, and, fortunately for the mission enterprise, this idea of better farming has been definitely associated with religion. In many cases, churches have appointed agricultural committees and have cooperated in the purchase of land with the hope of demonstrating to the members and neighbors improved methods of agriculture. We have invited all such committees to send their representatives to the farm schools. The instructors go out to the nearby farms and give advice and assistance to farmers on their immediate problems. At some schools we selected a particular farm for which we worked out a detailed plan of management, covering a period of three years. We construct or dem-

onstrate on the job better tillage machinery, and, with the use of an improved plow, demonstrate the methods of properly preparing the soil for planting. Few Korean farmers understand how to turn under manure, grow cover crops, or prepare the soil for planting. Seeds are often put into ground with the soil very poorly prepared and in rows so close together that work stock cannot be used in cultivating; thus it is necessary for the farmer and his family to till the soil with a little hand hoe."

In addition to the Y. M. C. A. agriculturists, there are in service in Korea three missionaries who are giving major emphasis to rural and farm training. They are working in cooperation with the Y. M. C. A. and the Korea National Christian Council as well as in their mission institutions. Dexter N. Lutz, of the Ohio State University College of Agriculture, is serving with the Presbyterian Mission; the Rev. E. Hemmerich with the Methodist Episcopal Church, South; and the Rev. Franklin E. C. Williams with the Methodist Episcopal Church at Kongju. In reporting a Farmers' Institute held in the Kongju High School last winter, Mr. Williams says:

"The Farmers' Institute was the outstanding event of the year at Kongju. Sixty-seven men attended the regular classes, while over two hundred attended the evening lectures. Each speaker was well prepared and in most cases was actually practising what he was teaching.

"The Y. M. C. A. sent two teachers, one of whom told what is being done in our neighboring province to the south in the raising of pigs and chickens, while the other gave practical lessons on the care of bees.

One afternoon was spent in visiting the local prison to observe what was being done along industrial lines, while another was spent in inspecting a model farm. One afternoon we gave a lecture on concrete, followed by actual labor on the school farm in the mixing of concrete for a fertilizer pit.

"A government official came to give instruction in general farming methods and in forestry. After the forestry lecture we went to the hillside to have a practical demonstration on our school forest reserve. One teacher gave two talks on gardening; while a local man, very successful for years in sericulture, lectured on that subject.

"Most of the lectures were mimeographed and the men in this way were able to take with them the substance of the talks in a form that will be available for reference as they put into practice what was learned.

"At the close of the class the findings committee recommended that each person select one project for further home experimentation and study, and that a model farm be established on each of the circuits.

"The chief value of such an institute is merely to work up interest. The big results will come only through the establishment of model farms in each neighborhood. Fifty dollars a year for three years would make any Korean farm a model one, and would work wonders in showing what scientific methods can do."

HALF THE POPULATION INVOLVED

Dr. Brunner suggests that as a first step in meeting the rural problem in Korea, from the purely economic viewpoint, the number of agricultural missionaries

should be greatly increased, "one or two in each mission." The purpose of these men would be "to teach the Korean farmer how to use more efficiently the resources he has; to demonstrate what can be done under the ordinary conditions; to experiment with these conditions as the Korean cannot afford to do; and to channel down to the farmer the discoveries of government experts, now too frequently entombed in the Japanese language." These men would have before them whole new fields for study, experimentation and demonstration in agricultural cooperation, organization of rural cooperative credit unions, introduction of sericulture and cottage industries, marketing, consumption, utilization for the small farmer of laborious government reports and investigations.

Many of the leaders of the Christian churches of Japan and Korea, nationals as well as missionaries, believe that the rural situation is the major challenge before the church today. They believe this because it involves more than half the people of both lands; because the city populations have gained something of the Christian message and point of view, while the rural village knows nothing concerning it; because, especially in Japan, the government compulsory school system is awakening the younger generation of farmers to its needs; because, with the growing social, political and economic power of the city, the farmer is becoming poorer materially and spiritually; and because no high degree of city civilization can long be maintained if its supporting rural population is ignorant and hungry. Dr. William Axling, of the Japan National Christian Council, believes that all denominations and organizations must get together for

a cooperative program, especially to "lay siege to the young men and young women, three million strong, who during the past ten years have organized themselves into young men's and young women's associations clear across the Empire, centering their activities around a cultural and educational program." There is also the call to "lay siege to the whole life of the whole community."

CHAPTER V

PEACEMAKERS IN THE NEAR EAST

IN the story of the patriarch Jacob sending his sons into Egypt from the land of Canaan in search of food during a famine period that lasted seven years, we get a picture that has been true of the Near East—that gateway to three great continents—through unknown centuries.

Jacob and his family made this historic journey about 1700 B. C. More recent history records a similar seven-year famine beginning 1064 A. D. Throughout the centuries this region or parts of it have known many periods of hunger and actual starvation. The causes of famine in the Near East are today the same as the causes of the famine in 1700 B. C., or indeed of the famine that threatened Abraham two hundred years earlier. Syria and Arabia and nearby territory depend upon the heavy rainfall of November and December for their moisture, since the rivers are small and the watersheds have few springs. Egypt depends upon the regular overflowing of the Nile for the irrigation of her valuable farm lands. When, therefore, the rain fails in a season, there is little or no crop at next harvest-time. This part of the world suffers, also, from occasional plagues of insects that literally eat up every green thing upon the earth. Every few years great clouds of locusts appear and destroy everything in their path—a plague like that visited upon the Egyptians in the days of Moses.

It follows then that the problem of agriculture in the Near East is, generally speaking, threefold: there is needed scientific irrigation, so that there will be a sufficient water supply even in times of little rain; knowledge of methods for controlling insects must be given to the farmers; and there is the universal need for better farming methods, better seeds, and better breeds of livestock.

No part of the world has been more harassed by the armies of conquerors than has the Near East, nor have any peoples been reduced more frequently to starvation and enslavement than the dwellers in these lands lying at the gateway between Europe and Asia and Africa—the meeting place and the crossroads of the world. Across these lands has lain the path of European invaders of Africa and Asia, and of Asiatic hosts as they have pushed westward to make their onslaughts upon Europe. Here have raged for centuries the religious and national struggles among Christian, Moslem and Jewish peoples.

Here was the “cradle of the race,” the beginning of civilization.

Here was born the Prince of Peace; and here has been the tinderbox that has set all Europe ablaze time after time.

Here were born the Jewish religion, the Christian religion, and the faith of Islam.

Here were the first Christian churches, here are the great Mohammedan mosques, and here is the hope of the Zionists.

Here—today—is the strange anomaly of a Turkish Republic; of an Armenia almost depopulated of adult male Christians; of little struggling republics in the

Caucasus, all part of the Soviet Union; of a British-controlled Jerusalem becoming again a home for the scattered Jewish peoples. Surely the World War and its aftermath have dealt strangely with the Near East! There still remain the old racial and religious causes of strife, with some fresh complications. There is still the need for food, the need from which has grown much of the racial and religious strife of both ancient and modern times.

AGRICULTURE IN THE NEAR EAST

Eighty per cent of the people in the Near East are engaged in pastoral and agricultural pursuits, peaceful pursuits until there is famine and the urge to migrate to more productive lands. All of these lands are poverty-stricken, though the people themselves little realize it until actual hunger takes its toll of life. In this situation there lies a grave menace to world peace. There are, indeed, those who believe that the peace of the Near East—and therefore historically the peace of the whole world—depends largely upon the development of better agriculture in these strategic lands that form the bridge between the continents, so that the struggles arising out of the elementary demands for food may be checked.

The following table will give some idea of the vast number of people in the nations of the Near East and the relatively small area that is theirs to produce food and clothing. When one compares these figures with conditions in the United States, where the population is thirty-five and five-tenths per square mile, the Near East figures are the more significant.

	<i>Area in sq. miles</i>	<i>Population per square mile</i>
ROUMANIA	122,000	17,393,000 142
JUGO-SLAVIA	96,000	12,017,000 125
ALBANIA	17,000	831,000 48
BULGARIA	39,000	5,596,000 140
GREECE	49,000	6,204,000 126
TURKEY	282,000	13,640,000 48
GEORGIA	25,000	2,660,000 106
AZERBAIJAN	33,000	2,313,000 70
ARMENIA	15,000	921,000 61
PERSIA	628,000	10,000,000 16
IRAQ	143,000	3,000,000 21
SYRIA	60,000	3,000,000 50
PALESTINE	9,000	852,000 94
EGYPT	347,000	14,168,000 40
ARABIA	1,200,000	7,000,000 6

"The population pressure is much greater than commonly indicated by population per square mile," according to Professor O. S. Morgan, of Columbia University, who made an extensive study of the agriculture of these lands. "Population per square mile of cropped arable land gives a sharper, clearer and more adequate picture. That is, Turkey has nearly six times the resiliency of Greece on this basis, but it is in much sorer straits than commonly indicated."

The following table of density of population in tilled lands shows more clearly the situation in four countries:

	<i>Population per sq. mile</i>	<i>Population per sq. mile tilled land</i>
TURKEY	48	120
ARMENIA	61	375
SYRIA	50	500
GREECE	126	700

The census of 1927 gives Egypt 14,168,756 inhabitants on an area of 347,840 square miles. But the land capable of cultivation, outside the Sahara Desert,

is only 12,226 square miles. The density of the cultivated area is 1,061 per square mile, and the agricultural population is 62 per cent of the whole.

Professor Morgan thus summarizes his impression of agriculture in the Near East, exclusive of that in Egypt:

"Agriculture, with few exceptions, looks poorly though industriously done. Agricultural methods are very frequently typical of what one would expect where the crooked-stick plow prevails, where the stone threshing-floor and fan are common, where a seven-hundred pound ox is typical of farm draft power, and one thousand pounds of milk per cow per year is the average. The exceptions I noted are in the citrus culture in Palestine, in attar of rose culture and manufacturing in Bulgaria. But nowhere did I find methods of husbandry for plants or animals in any considerable area, for any considerable number of farmers, equal to methods common among large groups of farmers of Western Europe and of America.

"Many of the agricultural areas are naturally rather unfavorable to many branches of husbandry. Scarcity of rain, or poor seasonal distribution of precipitation, is common, with the exception of Bulgaria. Exploitive agriculture through scores of generations has reduced the normal productivity of the soil.

"Herding, especially of sheep and goats, has retarded the advance of modern farming methods. It has kept areas subject to destructive erosion and unwooded. It has ingrained into common practice the unsanitary, improvident practice of burning dung for fuel, which practice for 1926, I estimate, cost one-half the national budget of Armenia."

CHRISTIAN MISSIONS IN THE NEAR EAST

Professor Morgan looks at the needs of the Near Eastern nations agriculturally, considers the progress that has been made in Western Europe and in America in many of these endeavors, and says:

"American leadership in some if not all these Near East countries is not only greatly needed; it is welcomed locally and by governments, or would be if volunteered. Furthermore, it would become American far-sightedness if we invested ourselves to a greater extent in carefully planned work in the Near East.

"The kind of missionary work that would be particularly welcome would in my judgment be vocational education; and at the outset, vocational *agricultural* education. To be quite specific it should be of the kind that we mean when we have here in America the objective, 'dirt farmer.' It should get away from academics as far as practicable, and yet be well founded as instruction and training in modern agriculture. It should aim to interest the youth, boys and girls, of communities in superior results in locally suited lines of practical farming. Through this means in school, on the farm, in class work, in extension courses, through agricultural fairs, scholarships, prizes and other legitimate awards, it should interest adults in every aspect of improved agriculture.

"In order to carry into effect such a program the primary need is the right foreign field American leader and teacher of agriculture. The next need is a group of native workers who, associated with the American agricultural leader, have grasped the idea involved and have the requisite training to be effective co-workers. In

a few cases at least it will be desirable to send some of these native workers on a short fellowship trip to America to study our Smith-Hughes and Smith-Lever systems. In the third place the agricultural work should be backed up by sponsors from America in such a way that those in charge of the work in the field will have ample support as to finances, supplies and continuity of program."

Such agricultural service given by America and by Western Europe—where many of these same situations have been faced and solved, and the results made available for the rest of the world—would, in the opinion of Professor Morgan and of many other students of the Near East, go far toward preventing further "explosions" in the Balkan countries. An economically happy people are not likely to stir up the hatreds that start warfare. Therefore, it is reasoned, agricultural demonstration in the Near East today may prevent tomorrow a bloodshed far worse than the worldwide struggle of 1914-18.

TEACHING CLASSICAL GREECE TO FARM

In ancient Greece, the seat of all that we call classical, is to be found one of the most modern and practical mission schools maintained by Americans in the Near East. It is the Thessalonica Agricultural and Industrial Institute, one of the oldest agricultural missionary ventures in the world. In recognition of his constructive services to the Greek people, the President of the Greek Republic has conferred upon Dr. Henry H. House, founder of the institute, the coveted cross of Chevalier of the Order of the Saviour. Dr. House

thus tells of the founding and activities of the institute:

"In 1894 I was sent by the mission to Macedonia, and the center of our work was the historical city of Salonica, the Thessalonica of the Bible. In the closing years of the century there came the pressing need of a boys' school for our evangelical communities in the large province where we were working, and my associates, Rev. E. B. Haskell and Rev. T. T. Holway, joined whole-heartedly in the plan to found a school that should be built on a farm, and where we could gather boys still in the plastic stage, that is, from twelve to fifteen years of age. The boys were to study from books for half a day, and have work lessons the other half. During the working hours they were to be occupied with farming, gardening and all the affiliated industries of a model village, and these were to be coordinated with their studies as far as possible, so that they might have a realistic rather than an artificial education.

"As our mission board felt unable to support such a school we succeeded in organizing a separate board of directors to stand back of the institution, which was incorporated under the laws of the State of New York, as the Thessalonica Agricultural and Industrial Institute. The course of study for five years would carry out the idea of a junior high school, but practically it was far more than this because of the sturdy responsible character developed, through the education of the heart, the head, and the hands.

"Of necessity this became a work of faith. It was necessary for us to borrow the money to buy the first fifty-two acres of land. This was in 1902, but the

institute was not incorporated until 1904. By that time our debt had been cancelled, and the school started with ten or twelve orphan boys. Our faith in our great Master has been wonderfully honored, as the story of the many favoring providences that have followed each other all the way along in our history has proved.

"We were obliged to begin in the humblest way with an Abrahamic plow, a yoke of oxen, and a village farmer. There was also a young man for a teacher, as I was carrying on my regular missionary duties, and could only go out two or three times a week to oversee the work. The boys lived in one room, sleeping on the floor, and rolling up their bedding in the morning so that the room could be used as a dining room, when the weather did not permit of dining on the porch.

"The land we had purchased was a desert-looking waste with no water upon it and a doubtful possibility of finding any. A school like this, in a land where work with the hands was considered degrading by the educated, might well have been considered a desperate experiment even under the most favorable conditions, where there was well-watered and fertile land with a kindly climate. Under the desert conditions in which we were placed some of our friends felt sure that we were doomed to failure; but we were working with faith in a great Master who had said, 'All things are possible to him that believeth.' It was indeed a small beginning but it was a work of faith and love.

"A little over twenty-five years have passed, and that barren spot is now a beautiful village, with orchards and vineyards, vegetables and flower gardens,

grain fields, barns, workshops, electric and water plants, pure blooded cattle, pigs, and fowl. There are dormitories, residences with well-equipped infirmary, a fine hall with library, natural history museum, and laboratory. The farm is equipped with reaper and binder tractors, seeders, and other necessary machines. So it is that all these nearly ninety students and a fine staff of teachers, supervisors, and other workers, form a model village, an education in itself for all the country around. The plant is worth more than one hundred and seventeen thousand dollars, and there is a small endowment.

"The institute has an enviable reputation in Greece, with graduates and pupils who have gone out to prove the value of this kind of education, while new and important opportunities are developing all about us. The arrival of over a million refugees in Greece and Macedonia (many of them settled about us) has opened up new avenues of service."

AGRICULTURAL RENAISSANCE IN TURKEY

The best known college of the Near East is Robert College in Constantinople. Recently it has added an agricultural course to keep pace with the agricultural renaissance of the region and peoples it serves. The plan is to give elementary and advanced work in field crops, gardening, dairying and poultry raising. The significance of the opportunities of this college, in its technical work and in its cultural work, can be well understood from this appreciation by J. A. Spender in *The Changing East*:

"Robert College, the famous American institution, is educating six hundred boys from twenty different

nationalities—Turk, Greek, Bulgarian, Persian, Syrian, Roumanian, Serb, Russian, Armenian and all the tribes from the Caspian to the Mediterranean. Christian and Moslem live here side by side in perfect amity. If the nations and races which these lands represent could follow their example there would soon be peace and progress in this land. When one sees it in the concrete, it seems supremely a question of education.”

The International College at Smyrna has recently added an agricultural department, a farm having been purchased some time ago. It is well equipped and managed, and has before it a great opportunity, as most of its several hundred students are Turks. Many of the students come from the interior of Turkey and are preparing themselves to develop the natural resources of the new Republic.

In Egypt we find the well equipped Assiut College, an American institution, adding agriculture to its courses. Although the school was founded in 1865, this part of the work is only now in the process of development. Animal husbandry, dairying and poultry breeding are receiving special attention; and a well rounded combination of teaching, experimentation, and extension work is planned.

In May, 1929, the village of Pordim, Bulgaria, voted a gift of eighty-two acres of its communal land as a site for a Folk School, and the Parliament sanctioned the gift “to be used eternally for the purpose of an agricultural school.” The founder and principal of the institution is the Rev. Edward B. Haskell, of the American Board of Commissioners for Foreign Missions. The majority of the children of peasants in

Bulgaria leave school at the age of fourteen to work on the farms. Later in life they realize the need for more schooling. This Folk School not only gives them practical farm instruction, but invites them to study during the five months of the year when farm work is light. It is meant to be a model rural school, and it is believed that when its value has been demonstrated thoroughly the government will make such schools a part of the educational system, as has been done in Denmark.

FARM TRAINING BY NEAR EAST RELIEF

Any record of Christian agricultural service to the people of Asia Minor would be far from complete without mention of the salvaging of war-torn, famine-haunted human beings by the Near East Relief during a period of fifteen years. Organized in the earliest days of the World War to give succor to the hungry, diseased and naked refugees who had been driven from their homes, the Near East Relief caught the imagination of the American people. During fifteen years it raised in America and spent in the Near East about one hundred and sixteen million dollars. Not the least of its activities was the feeding and schooling of some one hundred and thirty-two thousand orphan children of Armenia, Turkey, Greece, Persia, Palestine, Syria, Egypt, and Russia. And the funds for this vast undertaking—perhaps the greatest single philanthropy the world has ever witnessed—came largely from the churches and church members of America; this practical Christian undertaking made appeal to their highest ideals of service.

Two problems faced the relief workers when or-

phaned children came under their care. The first was to feed them; the second, to train them to be useful citizens. The answer to both problems was the same in many instances: teach agriculture. For by teaching agriculture, the children were helping to raise their own food, and they were gaining a knowledge through which they could secure a good livelihood, for the Near East will remain a great farm for many years to come.

The result has been that large numbers of the boys and girls trained in Near East orphanages and schools know much more about modern farming than their fathers ever did. They are alive to their nation's agricultural problems, and they know how to meet them. They are prepared to make a vitally important contribution to agricultural development in the Near East. They have the broader vision and the spirit of inquiry and experimentation, the qualities that the farming of their ancestors has lacked during the centuries.

And now that the refugee and orphanage work of the Near East Relief is about complete—most of the orphans having reached or nearly reached the age of sixteen—a new body, the Near East Foundation, is taking its place “for the purpose of meeting the unmet needs” of the peoples of these lands. The “unmet needs” include service to millions of people, mostly rural people, in the realms of health, of agriculture, of secular education, of child and community welfare. To all intents and purposes the Foundation is an undenominational Christian service agency, carrying on its work through nurses’ training schools, clinics, maternity centers, baby clinics, agricultural stations and

farms, night schools, recreation centers, and playgrounds. Two agricultural undertakings now carried on by the Near East Foundation are worthy of especial note. One is a project for farm instruction for orphans and refugees in fifty-four villages of Macedonia in Greece; the other, the Polygon Vocational School in Leninakan (formerly Alexandropol), in the Soviet Republic of Armenia, one of the constituent republics of Russia.

RESETTLING A MILLION REFUGEES

A million refugees have been resettled in Macedonia. Here there is going on the struggle of an impoverished people handicapped in their efforts to maintain themselves because of their general ignorance of modern scientific farming. Refugee families are in want on farms which should provide a comfortable living.

The Near East Foundation is particularly interested in this Macedonia area, because four thousand orphans who have grown up in its institutions are already outplaced with refugee families, and others are being sent there as they leave the orphanages. The training received in the orphanages is not adequate for the stern business of farming in Macedonia. Yet children are often outplaced as young as twelve in order that they may develop in a family rather than in an institutional environment. If the boys are to become farmers, it is to their own advantage, as well as to the interest of Greece, that they be competent farmers.

The Foundation felt that if it could provide farm instruction in connection with their farm work, it could also easily include local boys and refugee farmers in classes and thus cooperate in one of the fundamental

problems now before the government. Refugee farmers will accept ideas given them by adult Greek instructors which they laugh at when presented by the orphans they take into their homes. Since the boys work as a rule on a contract basis with their refugee patrons, their whole future is involved with that of the struggling farmer. If he succeeds, the boys are successful; if he fails, the boys fail with him.

In 1928 the Near East Relief undertook an experiment—now carried on by the Foundation—in practical education in farming for these orphan boys on Macedonia farms. The plan was worked out in fifteen villages where several hundred boys are outplaced. The idea was to give the boys a workable knowledge of modern farming methods to enable them to get the best possible results from their land. It was also hoped to modify, so far as possible, their discouraging environment. These newly resettled villages are composed of impoverished refugee families for whom it has been impossible to provide much in the way of health, recreation, education, and physical care.

The initial experiment was an application of various tested American principles of farm extension which make available farm instruction and practical experience to the farmer on his farm. The work was based largely on the Smith-Lever and Smith-Hughes plans. The Smith-Lever program provides for the bringing of modern farm training and instruction to farmer families; the Smith-Hughes brings modern farm training and instruction to youth in schools.

Many difficulties confronted the establishment of the plan in Macedonia. There was, for instance, the problem of organizing classes among boys whose days

are spent in exhausting field work; and the task of finding capable instructors, men with agricultural training who could speak the necessary dialects and who being themselves "dirt farmers" could get and hold the interest of the villagers. The American director, Harold B. Allen, organized fifteen villages, secured in each the cooperation of the mayor, village priest, schoolmaster and the local volunteer leader of Near East Relief. The school house was the classroom. The fields and barnyards were the laboratories. The students were ex-orphan boys, local boys and refugee farmers. The subjects were closely related to the immediate problems of the farmer. Classes met two or three evenings a week and on Sundays. In one village, where twenty boys are outplaced, class attendance was between thirty-five and fifty.

The response was proof of the need. Farmers, men and boys alike, were eager to learn, and after a day of field work attended the classes. Interest was keen. The orphans were exceptionally helpful. A few have their own plots and, in some villages, a small piece of ground was set aside for tests of selected seeds and newer methods. In a number of cases the work produced dramatic results. A distressed farmer appeared at class and told the instructor his crop was being ruined—by what he did not know. Until recently the crop gave every evidence of a good yield; then suddenly a blight appeared. It was a vital matter to him, for crops had been poor for two years and another loss meant destitution. Mr. Allen inspected the crops and recognized the presence of an insect pest. He knew how to combat it and in short order the man's crop was saved. The incident made a deep impression.

It was actual proof that scientific knowledge is valuable and as such readily appreciated by the simple people.

"Farmer Dimniotes and his son Sophocles, in the village of Aghia Marina, listened to the voice of one of our rural workers and sprayed their portion of the village vineyard as suggested," reports Clayton E. Whipple from Macedonia. "The result was an excellent crop. Their neighbors had no crop, it being a poor year for grapes. Next year the villagers have promised to spray. One man with initiative such as Farmer Dimniotes and a wide-awake boy like Sophocles in a community are priceless aids to our work.

"In this second year of our rural extension work we are running across many similar demonstrations of the practical character of our program. You cannot change through lectures and books the traditions and practices which are founded upon thousands of years of experience; nor through work done at an experiment station or school which the peasant never has the opportunity to visit. But show the value of a new way of doing things in his own village on a piece of land or vineyard like his own, let him realize the difference to his pocketbook and his stomach, and watch him change his methods!"

The Foundation plans to extend this rural village agricultural instruction begun in fifteen villages so that by 1934 it will be given in one hundred and seventeen villages in Macedonia.

AN AGRICULTURAL CENTER IN ARMENIA

Polygon Post, in the republic of Armenia, once the barracks of the Czar of Russia's magnificent artillery

troops, later a shelter for thousands of ragged orphaned boys and girls whom Near East Relief gathered within its walls, now is the center of an educational experiment which is challenging the interest of all Transcaucasia. In the great stone buildings surrounded by five hundred acres of irrigated farm land near Leninakan, almost within the shadow of Mount Ararat, Near East Relief established in 1926 a school of vocational training for orphans and underprivileged children from farm-village homes. It is the first and only school of its kind in the Transcaucasian republics. At its head is Everett D. Gunn, a graduate of the University of Kansas, and of the Kansas State Agricultural College.

The school came into being as a result of an effort to help Near East Relief children make the transition from orphanage life to life in the Caucasian farm-villages where most of them find home and work. Some twenty-five thousand boys and girls have been out-placed in the Caucasian area.

Polygon Vocational School should accomplish two things: the development of workers skilled in farm, home and village tasks; and the promotion of extension activities to improve farm and home living conditions in village communities. In other words, through this school and its specialized program, the Near East Foundation hopes to turn out boys and girls trained in fundamental skills of farming as it should be carried on in Armenia and able to establish homes of a better order than now exists.

Among the subjects taught are principles of seed selection; modern soil management, including deep plowing, mulching, crop rotation, use of fertilizers;

use of modern machinery through collective farming; livestock management, including poultry, bees, pigs, sheep, cattle, horses; winter feeding of dairy stock; farm management.

All the resources of Polygon Farm are at the disposal of Polygon Vocational School. This five hundred acre farm with its practices, equipment, herd of dairy cattle and layout of buildings is the direct result of experience and investment in farming through ten years of relief activities in Armenia. In a country where milk is scarce and of poor quality, the Foundation has a selected herd and complete modern pasteurizing and bottling plant. Boys and girls under expert supervision handle every step of the milk production, from milking the cows to sealing the bottles.

The farm shop and model home units bridge the gap between the more ideal conditions of Polygon Farm and rural life as it is in the Caucasus. These model units also provide instruction in collective farming as well as in the industrialized type now in effect in Polygon. In the shop, pupils are taught to repair farm machinery and to make simple furniture suited to farm homes. They also receive elementary training in blacksmithing, tailoring and cobbling, and other trades which they will need when they are village farmers.

Home-making courses include child care; feeding the family; home improvement and decoration; simple sewing and darning—which are taught to boys as well as girls. The girls are shown how to make their homes clean, comfortable and attractive. Above all, the pupils are taught to utilize fully the resources at hand.

Through its extension work Polygon Farm has been

a source of interest and inspiration to Armenia since it was started in 1922. It has been run as a demonstration farm to show what can be accomplished by knowing how to farm. Blooded stock, exceptional and varied crops, American machinery such as the combine thresher and harvester, have set new standards in farm equipment. Every time the combine has been in use farmers have come to see it. Special days have been set aside to accommodate both officials and peasants who wish to observe the new equipment. They have watched the combine, guided by a boy, do the work of forty men in one hour. Largely as a result of these demonstrations, many villages already have tractors, plows capable of turning deep furrows, and use modern harvesting machinery.

As part of the school's extension program, winter dairy feeding has been introduced. Much of Russian Armenia is high tableland with an average elevation of five thousand feet, cut by mountain ridges. Summers are short and winters long and cold. Winter feeding of livestock has always been a serious problem. Cattle have died by the hundreds of starvation during the cold months. The severity of winter weather makes the tower silo, the only kind known in the country, much less practical than the pit type.

In 1927, two modern pit silos, the first in Armenia, were dug by Polygon boys. With a store of green cut fodder (sunflower stalks), Polygon cattle came through the winter in prime condition and milk production increased. Local farmers wanted to know more about this way of keeping silage, and in 1929, as an extension activity for Polygon Vocational School, there was constructed a demonstration silo at the Alex-

androvka Commune, about six miles away. The work was done by the school boys and the silo filled with first quality Colby Kansas Bloody Butcher Corn.

In 1929, Polygon School was asked by the agricultural authorities in Leninakan to cooperate with them in a real "country fair" for the entire district. The fair took place in October, the first since the World War. Polygon Farm took prizes for every one of its exhibits. Semental cattle, modern machinery, and variety of crops were all centers of excited interest, as was a display of canned fruits and vegetables, jellies and jams. This way of preserving foods was unknown to most of the rural folk.

PEACE!

Peace! Peace was the great hope and desire of the children of Israel as they plowed their fields and tended their herds on the hillsides and valleys of Palestine. In the Old Testament the word "peace" is found more than two hundred times. Yet the history of this peace-loving people is one of war, of bloodshed, of subjection—largely because of pressure of population by neighboring peoples and their quest for food and for land upon which to raise food.

Peace! Peace has been the desire of most of the nations and peoples of the Near East since the earliest days of recorded history: peace to farm, peace to tend their sheep, peace to enjoy the simple comforts of family and community life. But the Near East has been a bloody battlefield, crossed and recrossed by contending armies with many goals and many ambitions. And as yet there is no peace.

Peace! What of the future of the Near East, its

peace, the peace of the world? If much of that story-to-be can be written by men and increasing generations of men like House and Allen and Gunn, through such agricultural institutions as those in Thessalonica and Macedonia and Leninakan, it will be a story of peace. Such men are in the truest sense, in the most concrete sense, teaching the nations of the Near East, yes, the nations of the whole world, to beat their swords into ploughshares. They are helping to bring in that day when all the people of the new Near East can sing again with the Psalmist,

“When our garner is full, affording all manner of store,

And our sheep bring forth thousands and ten thousands in our fields;

When our oxen are well laden;

When there is no breaking in and no sallying forth,

And no outcry in our streets:

Happy is the people that is in such a case;

Yea, happy is the people whose God is Jehovah.”

CHAPTER VI

AFRICA: FARMS IN JUNGLE AND VELDT

IF all the countries of Europe, together with China, and India and the United States of America, were to be set down upon the African continent, there would still remain an area of one million square miles for Africa's own people. The population of all these lands is about one billion four hundred and fifty millions. Africa today has only one hundred and fifty million people—and these could be cared for in that remaining area of one million square miles.

These are the two most important facts about Africa from the standpoint of geography: her great size, and her comparatively small population.

In *Education in Africa*, the first report made by the African Educational Commission under the auspices of the Phelps-Stokes Fund, is found this general description of the continent's agricultural wealth:

“The forest and agricultural possibilities of Africa have scarcely been touched. The forests include large quantities of lumber which could be made into articles of commercial value or shipped to other countries for manufacture. No more valuable or varied timber lands are to be found than the vast forest areas of Central Africa, rich in both dye woods and cabinet woods. There are extensive valleys, plains, and plateaus producing a variety of vegetables, grains, and fruits, and capable of much larger production under proper cultivation. South Africa produces tons of wheat, maize,

Kaffir corn, potatoes, oats, barley, and tobacco, and great quantities of fruits, including grapes, peaches, pears, melons and other products. In Angola there are coffee, sugar, cocoanuts, vegetable oils, maize, yams, tomatoes, peanuts, melons, oranges, lemons, limes, pineapples, bananas, peppers, and tobacco. The extensive plateaus of the colony combine qualities of both the tropical and temperate zones, producing grain, vegetables, and fruits of great variety and excellent quality. West Africa is known for its immense production of palm oil, cocoa, and rubber. The areas devoted to cotton are increasing with great rapidity, and promise to rival the great cotton-producing sections of the world."

The Africans, like most primitive peoples, know much about agriculture. But the struggle for existence, hard experience, and bitter famine, have made them fatalistic, and hesitant about experiment, and have held them closely to tribal custom and tradition. The amazingly rapid growth of brush, forest, and tall grass—ideal hiding places for fierce wild animals and game—has driven the African to methods which impress American farmers as rather wasteful of the soil. The African, perhaps not understanding why, found that his crops did not seem to flourish after two or three years on the same soil, but that they grew well when new soil was cleared by cutting and burning the trees and brush. He learned also that these fires would drive out the game and provide a great hunt and a rich feast of meat. After the fields have been cultivated a year or two, the insect pests multiply so rapidly that he abandons the land and moves on to make new clearings.

The African is likely to limit his diet to maize, cassava, rice or some other staple which he knows he can raise by simple methods. He does not take easily to new or varied foods, and the introduction of new articles of diet requires much wisdom and patience on the part of agricultural teachers. In many places the African has cattle but may not eat the meat nor drink the milk because of old taboos, traditions that have all the weight of custom enforced by superstition, and, in all probability, by sad experience in other years.

It has been said that the farmer of Africa is the woman. Under primitive customs the man was the warrior and hunter, the woman was the food provider. The men will cut the big trees and do the burning, but they leave the gardening to the "weaker" sex. Educators who have studied the place of women in the changing social and economic conditions that are taking place in Africa, seem agreed that the ancient distribution of work between men and women should not be rapidly overturned. Therefore it is necessary that the education of girls be as largely agricultural as literary or domestic.

The Western world rightly decries the lot of the African woman in that she is burdened with so many physical labors that proper attention cannot be given homelife and childbearing. Statistics tell us that from one-third to three-fourths of the children born in Africa die in infancy. In undertaking measures to reduce this awful toll, it needs to be remembered that to confine women to an indoor life, with more or less idleness, would, in the midst of the physical conditions prevailing in an African kraal, have disastrous results upon domestic life. The African woman owes her

magnificent physique in a large measure to her active outdoor life in the fields. This mode of life may well be continued, under proper guidance and with elementary instruction in the natural sciences and agriculture, so that larger returns from the soil may be obtained and greater satisfactions be found in the whole round of life.

AFRICA'S AGRICULTURAL NEEDS

One of the best practical studies of the agricultural situation and agricultural needs in Africa is that made by Dr. Homer L. Shantz, former plant physiologist of the United States Department of Agriculture, who accompanied the Phelps-Stokes Commission in its examination of all phases of Africa's education. Says Dr. Shantz:

"Africa is a large continent, almost four times the area of the United States. The type of country varies from pure desert to the most luxuriant tropical forests, and from snow-capped peaks to regions of intense tropical heat. We may therefore expect to find extremely varied agricultural conditions, and in considering the agricultural needs of Africa this must be kept in mind constantly. There are sections in Africa in which the country changes sharply from one type of agriculture to another within a few miles.

"The hoe is practically the only agricultural implement used in preparing the land for crops. There are advantages in this simple, primitive instrument. Forest land, with tree trunks lying about, can be utilized, as can also the mountain and hill sides; and in much of Central Africa the mountain sides are the most intensely cultivated of all the agricultural lands.

Almost without exception the native population is not so dense that the land is fully occupied. Areas of unbroken land are selected carefully, and from this trees are cut, the grasses cut and burned, and the soil hoed for the first crop. The work up to this point has been carried on by the men. It is now planted and cared for by the women, and the crops are harvested, stored, and prepared for food. In cattle-raising tribes the men usually care for the cattle. There are many exceptions to these general statements.

"Land is seldom cultivated for a long period of years. Crops are grown on one piece of land until deterioration is detected, and then a new land is broken up. In this way the native is always assured of good land, free from bacterial and fungus diseases, and of relatively high fertility. As a rule the native plantings are mixed, the land supporting several crops at the same time. The plantings, except in regions of pronounced drought periods, are not simultaneous. There will be found in the same bed grain in every stage of development. At other times fields will be found which are given over to a single crop. This is particularly true where the plantings are made at the beginning of the rainy season and the crops are harvested off at the beginning of the drought season. Here the principal production is cereals of the warm weather type, such as sorghum, pennisetum and corn. These are stored in granaries to furnish food during the remaining portion of the year. . . .

"Probably the greatest need in the development of agriculture in Africa is instruction in the simple facts of natural sciences, on which agriculture rests. The native knows little of physics, chemistry, meteorology,

or biology as such. To the native mind the chances of a crop failure are more dependent upon the good or bad spirits than on anything he can do. To place clearly the responsibility in crop failure it is necessary that he be shown the relation of cause and effect in the physical world, and that if he is to succeed he must meet certain requirements. It is not argued that direct agricultural demonstration work will not be helpful and necessary, but if the native African is ever to become a resourceful agriculturist he will have to understand some of the simple facts of the natural world in which he lives. Almost without exception the natural occurrences such as rain, drought, crop failure from any cause, are attributed to evil spirits and consequently somewhat beyond the control of the native. Not until he has some idea of the natural causes can he be expected to adapt his agriculture to changes in conditions.

"The greatest needs are a sympathy with native methods, a willingness to begin the structure of agriculture at the bottom rather than at the top, a patient presentation of a few of the natural laws upon which agriculture is based, a willingness to build on the native plan and to improve what already exists rather than to begin with an entirely new system."

AGRICULTURE IN AFRICA'S EDUCATION

Dr. Thomas Jesse Jones in *Education in East Africa*, the report of the second African Education Commission, says: "The African natives are relatively far more dependent on agriculture than any people in the world. Agricultural education should correspondingly receive large consideration in the school plans.

While the native people have learned much through centuries of experience, there is much more to be learned through scientific study of the possibilities of the soil. The radical changes as regards land tenure and consequent limitation to smaller acreages; the new conditions of marketing, additional wants of individual and family life; the demands of government for taxes, and numerous other changes brought about by the entrance of Western civilization into Africa, all combine to create a perplexing agricultural situation which is baffling the natives. In addition to these real discouragements to agriculture, there are the enticements of large industrial operations maintained by European capital. The lure of new experiences, the desire to share in the activities of the Europeans in control, are attracting large proportions of the natives from the soil to the artificialities and dangers of labor compounds.

"It seems obvious, therefore, that schools should make every possible provision for agricultural education. However extensive the native experience and knowledge may be of soil cultivation, and however limited may be the agricultural knowledge of the school staff, it should be possible for them to bring to the native a sense of the vital importance of agriculture as an element in education. It is imperative that schools shall cease to give the impression that knowledge of the three R's and of the subjects usually in the curriculum is of more importance than agricultural knowledge."

A study of some of the educational efforts carried on in Africa by the several European governments controlling large colonies there, would indicate that

the authorities are not unaware of this agricultural need of the people.

A visit to the British agricultural station at N'jala, Sierra Leone, shows a demand for trained leadership among the natives. The British in Sierra Leone are attempting to localize the growing of certain agricultural products in certain areas which are best suited to their production. The French government in the Ivory Coast is doing the same thing in the matter of the curing and preparing of cocoa for the market. In Angola, the Portuguese have an agricultural museum and experimental station at Loanda, and a few scattered agricultural stations giving a small amount of instruction. At Fort Hare, in the Union of South Africa, a well-rounded college has been organized, and much of the idealism and practicability that went into the making of Hampton and Tuskegee is being reproduced here.

Another newly organized institution is the Prince of Wales College, at Achimota, on the Gold Coast, serving the three British colonies in that part of Africa. The curriculum gives recognition to the need for agricultural training.

Concerning the Tsolo Agricultural School, in British South Africa, Dr. Thomas Jesse Jones says: "This is the only institution in South Africa for the agricultural instruction of the natives and probably the only school in all Africa devoted solely to the agricultural education of the black people. It was reorganized in 1916 and is supported by appropriations recommended by the Native Bhunga, a council of the Transkeian Territory. It is interesting to note that the only purely agricultural school in Africa was estab-

lished by a native council and is supported by appropriations originating entirely in native taxes. The teachers are four white men well trained in the various phases of farm activities. There are two classes of twenty-five boys each. The entrance standards require about six years of education. One class works in the morning and goes to school in the afternoon, the other class reversing the time. The arrangement of study and work is very good. The boys sleep in round houses made of wattle and daub, similar to their homes in the kraal. They eat in a common dining-room. The discipline and order seem to be very good. The plan and purpose of the institution are among the most significant of all that the Commission saw in Africa."

The Agricultural Department of the Government of Kenya has two centers for training Africans in the theory and practice of agriculture. Makerere College, a government school for natives in Uganda, has courses planned to educate visiting teachers for small rural schools, and to give a general scientific knowledge of gardening and agriculture.

This is by no means an exhaustive list of government efforts to give rural and agricultural training to a people largely dependent upon the farm for a livelihood. But when one considers that ninety per cent of the African children enrolled today in institutions of learning are in mission rather than government schools, the need for attention to agricultural teaching and methods by the mission schools becomes apparent. Of course, some of the governments are helping by grants-in-aid given to mission schools doing especially valuable work. The mission agencies and mission stations, by placing in educational service throughout

Africa trained agricultural teachers, demonstrators and experimenters, and by agricultural explorations and surveys, are years ahead of most colonial governments in their service to native peoples. They are demonstrating to the governments; they are quietly leading the governments to plan more wisely, more practically for the agricultural education of Africa's peoples, to the end that men may live the Christian way in a healthy economic environment.

OLD UMTALI, RHODESIA

"The teacher is a first-rate practical farmer who approaches this subject in a way that the natives can understand," said Dr. Thomas Jesse Jones, after visiting the agricultural work of George A. Roberts at Old Umtali, Rhodesia. Old Umtali is a mission station of three thousand acres of land given to the Methodist Episcopal Church by Cecil Rhodes. Mr. Roberts went to Africa to superintend this agricultural work and to develop a school; he is still in service in Rhodesia. We will let him tell his own story of beginnings and accomplishments:

"When I had been a short time at Old Umtali as a missionary, I was given some classes. I was just out of Iowa State College, and thought I knew all about it. So I prepared some very elegant lectures. . . . I delivered them before classes of African lads in our school. But they did not work! The classes listened all right. The truth was there, but it did not get hold of the people.

"The next time I lectured, I brought some ears of corn and lectured about this corn along with the rest of the written material. The third time I found they

had not learned much about what I said, but they had remembered the corn.

"Later I brought up pots of all kinds of soil—black soil, red soil, yellow soil, sandy soil, clean washed river sand. I made three pots of all of these. In one we put barnyard manure; in the second fertilizer; and in the third plain soil as it was. I planted these and when the people saw the stuff grow better in the pots with the fertilizer, that settled agriculture in that country.

"We sent for pigs and put them in stalls and stables. We had pure-bred large black Suffolk pigs and native pigs. Once in two weeks we had everyone weigh those pigs. They could read the scales and see for themselves the gain and that amazed the people. It took an hour or two each time to get them weighed. At the first time of weighing, I would ask, 'How much does this pig weigh?' They had no idea how much they weighed. They would say, 'Two pounds,' 'One hundred pounds,' 'One thousand pounds,' etc. Then we weighed those pigs. They found out that the old poor pig gained for a little while and the young one a little more, and that the pure-bred pigs gained nearly one and one-half pounds a day. Then we figured what those pigs increased in value. That was news!

"We study the diseases that have to do with the decrease in the value of the livestock. One is the tapeworm. It is awful in Rhodesia. I took up the question of the tapeworm and gave lectures in class. I had a tapeworm in a bottle which I showed to the people. I had a tapeworm that came from a boy whom all the people knew. The native people came to understand that they got tapeworm by eating pork or beef that

was not cooked. Now we have nearly cleaned out tapeworm from the people in our section of the country.

"We have found out about the only way to do agricultural work is by demonstration along with teaching. My classroom work is the 'parade work.' It does not amount to much, but it is the thing that makes the people believe that they are having school.

"Then we keep a dairy of cows. This is necessary because people are so poor and thousands of babies die because of malnutrition. Very few people use any milk at all. The people are poor and hungry, not because they do not have food enough, but because it is not the right kind of food. . . .

"The native cows give only about three bottles of milk a day at the best. To milk, they tie the cow to one tree by the head and to another tree by the hind feet, bring out the calf, and let it bump against the cow for a while, and finally the milk comes. Sometimes the calf dies. Then they skin the calf, take the skin and stuff it with grass and bump this straw-stuffed calf against the cow and they get the milk just the same. I think this is the best kind of a calf after all, because it does not drink any milk.

"We keep cows that I think are suitable for the conditions and for teaching the people. There are three or four native cows and five or six that are one-fourth or one-half breed Jersey or Holstein and two registered Holstein cows.

"We take those cows, both native and registered, and feed them well and have the boys milk them and keep them clean. The natives like to squat down and let the milk run through their hands. It took me a long time to make stools for them and get them to

use them. They would not sit on them. I would find them squatting on the ground the same as ever. So I said, 'If I ever catch you milking that way, I am going to make you pay me a shilling.' I had no more trouble.

"I took a flock of chickens to my house and I cared for it myself. I found that fleas got into the fowls' heads until they were almost black. Finally we found out that if we kept that fowl house clean every day, they had no fleas. I used to say to my class, 'If you can find three fleas on any of my hens' (and hens were worth about five dollars apiece at that time) 'you can go and take the hen. It is yours.' I have had people look and try to find a hen with three fleas on it. I never lost one of my hens for that reason."

A PASTOR-TEACHER'S LETTER

Old Umtali trains men as pastor-teachers to go back into their villages as practical "village life rebuilders." They have a general knowledge of simple medical practices also. A human document, an extract from a report of one of these pastor-teachers to the missionary, illumines the picture of his practical agricultural service:

All the people were in trouble about vegetable, about digging garden and when I talk to them about manure from the chickens, they say, "We are not dirty people."

Jesus said, Not all talking but doing.

I took my hoe and digged garden beds. Four beds I did put manure. Four beds I did not put manure.

People says, "How you can take manure from

chickens house! Are you not afraid 'tis bad smell?"

I ask the people, Are you like to see my garden? I want you to see the different you go to find between them.

They say, "Some beds have poor vegetable. How 'tis happen?" I say, It is the reason they have no manure. Tastes the vegetable in every beds. They bad taste? No, all they are right. You are believe they have different. My teacher did teach me. I did put manure. That manure I did take from chickens house. If you want I will teach you.

They say, "We do like you will teach us about gardens."

Today hundreds of the graduates of the Old Umtali school own their own farms and gardens. In one village, where a graduate of the school is pastor-teacher, over forty villagers own plows and plow oxen. No wonder this village is self-supporting and that the members have built a stone church entirely at their own expense. They are showing the way to a new Christian village life in Africa.

A JEANES SCHOOL AT KAMBINI

At Kambini, Portuguese East Africa, the same mission has established a Jeanes Training Center—"the first Jeanes school to be established outside of British territory in Africa, and the first south of the equator." The Jeanes school is simply an idea taken from rural schools among Negroes in southern United States, a system of supervisor teachers for a group of schools.

"The purpose of the Jeanes school at Kambini,"

says its principal, Ira E. Gillet, "is to train supervisors who will regularly visit our Christian villages, encouraging and helping the teachers, thus making the African village school live and throb with new life. According to Dr. Loram, it should make the average village school from sixty to seventy-five per cent more efficient. It will bring to these schools:

"Some knowledge of hygiene and sanitation, emphasizing the prevention of disease. Knowledge of agriculture and gardening, emphasizing the best use of native methods, but pointing to the use of better European methods. Training in the construction of better homes, with practical instruction in making doors, windows, tables, chairs, etc., from native materials. Instruction in school crafts such as mat-making, basket-weaving, wood-carving, etc. Opportunity for recreation, including the best native and European games, story-telling, songs and native music, and simple Boy Scout and Girl Guide activities.

"We realize that this new and additional task is no small undertaking when we consider our limited funds and the few workers. But it is nothing less than is urgently needed if we are to help lift our African children out of heathen surroundings, or the struggling village school to something so much better than they would otherwise have had."

Julian S. Rea, the Amherst graduate in charge of the agricultural work at Kambini, reports that the main features of the agricultural program carried on with this school as a center include famine prevention, the securing of new food crops and forage crops, the development of markets for the disposition of money crops which the African Christians are taught to raise, the de-

velopment of new methods of cultivation, the invention and development of labor-saving devices, the teaching of better methods of preparing new and old foods, the introduction and development of new and better varieties of grain, peanuts, beans and other seeds, teaching the care and use of animals and their products. Mr. Rea and other missionaries in this region are planning in the near future to develop the use of such natural resources as nut-bearing trees, and tropical plants that can be used as food or for their oils, medicinal plants and those yielding colors and dyes. In addition to this the wives of the evangelists at Kambini have been taught to make rough dishes by means of a simple potter's wheel, boys have been taught to make baskets from reeds grown in the neighborhood, and the use of a weaving loom, lathe, bellows, oil extractor, drying rack for fruits and vegetables and other mechanical devices which have been installed.

"I believe," concludes Mr. Rea, "that the Christ that came that the African might have life and have it more abundantly will bless the type of work outlined here, and use it for the real advancement of the Kingdom of Heaven on earth. This alone will assure a delayed justice to the African."

MOUNT SILINDA AND GALANGUE

Mount Silinda Training and Practicing School in Rhodesia is maintained by the American Board of Commissioners for Foreign Missions, as a normal, industrial, agricultural and nursing school. It has thirty-four thousand acres of land, a gift from Cecil Rhodes. Concerning this school Dr. Jones reports:

"The manual training is excellent. Woodwork and

agriculture are taken alternately. There were seventy-two students at work, each having five hours of agriculture and five of woodwork each week. Both the woodwork specimens required by the Education Department and the useful articles which natives need in their own homes are made. The brick and tile-making plant is used for trade rather than for education. Agriculture is on a large scale, over two hundred acres being under cultivation. Theoretical and practical instruction are given, and each native has his own seed-bed and vegetable allotment."

This same mission tells of the practical educational work carried on at Galangue Station School and at sixteen outstations, each with a small school, the total enrollment being eight hundred and ninety-four boys and girls: "It was decided to strengthen the existing outstations in place of opening new ones, with a staff of at least two families in each, to cooperate in a program calling for church, school, dispensary, experiment farm, etc. Ten recently married young couples, products of the Galangue Station School, are the present reinforcements. During the past year the young men utilized their trades-class time making doors, windows, frames, furniture for their future homes and also a set of tools. Each man fattened a hog and the funds realized were invested in household utensils. The young women were given one acre each of the mission farm so as to have food to start with. Their wedding day was a gala day. Over one hundred people sat down to a modest feast. None of the couples got into debt over the ceremony or preparations and the indirect teaching of this economy will be far reaching."

A number of British societies working in Africa

maintain schools and mission stations that give considerable attention to rural and agricultural training. Among these may be mentioned Livingstonia, of the United Free Church of Scotland; Blantyre Institute in Nyasaland, a school of the Church of Scotland; Lovedale Missionary Institution, of the United Free Church of Scotland; Mariannhill Institute, of the Trappist Order from Bavaria. Lovedale is probably the best known missionary school in Africa—though an agriculturist might wish its farm teaching and demonstrating features were more largely developed.

A PROGRAM FOR AFRICAN AGRICULTURE

The report of the African Education Commission lays considerable emphasis upon the use of what is called the "central station school"—the school next higher than the village elementary, and the one to which boys and girls giving promise in the village schools are promoted—as a teaching center for agriculture and rural arts and crafts. The general instruction that should be given all pupils, a list of adaptable suggestions that might well be taken by agricultural teachers in any land, is presented in the report of the Commission as follows:

"The agricultural course should be required of every pupil and should cover five periods a week for one year and a half. Experience shows that the greatest emphasis should be centered in the actual carrying out of the projects. The classroom instruction should be reduced to the minimum and should only be used to supplement the projects and answer the questions that arise through actual doing of the work. It is especially desirable that pupils living in the neighbor-

hood of the school should work out the projects in their homes. Another important requirement of success in this course is the employment of a teacher who should devote the entire year to the work.

"The course should include all the agricultural activities possible on a homestead—vegetable gardening, fruit growing, flower culture both for ornamental and selling purposes, care of chickens, a dairy cow, and swine.

"Through vegetable gardening, the students should learn how to plan and manage a twelve months' garden for the intensive production of vegetables. They should be familiar with companion and succession crops and the best methods of rotation. They should learn the varieties adapted to season, how to manage the soil, how to plant, cultivate, control pests, and harvest both annual and perennial vegetables so as to get the best results.

"In the growing of fruit, the student should learn the soil requirements, methods of propagation, cultivation, spraying, harvesting, marketing of fruits.

"Through flower growing, the students should learn how to make and root cuttings such as geraniums, roses, and shrubs. They should become familiar with annual, biennial, and perennial flowers suitable for home decoration. They should learn how to make and manage flower borders, how to plan and plant the front yard.

"Through the care of chickens the students should learn the principles involved in breeding, incubation, brooding; feeding for rearing, egg production and fattening; housing and sanitation, diseases and parasites; and the marketing of products. Wherever pos-

sible the students should learn how to breed, feed, house, and care for a dairy cow in order to produce sanitary milk and butter economically. In addition, they should learn how to breed, feed, house, and manage swine for the economic production of pork; how to cure and market the products."

THE FUTURE OF AFRICA'S FARMS AND FARMERS

With the development and spread of agricultural science—with the application of the skill of the master-engineer to Africa's lowlands, and deserts, and rivers, and unirrigated acres—with the application of medical and sanitary science to heal Africa's physical ills—with the turning of publicity, of social engineering, of economic science to the healing of industrial ills—another beautiful and bountiful garden will be open to the hungry and over-crowded of the world.

Will the African native live well in this broad land that has been his home from time immemorial? Will he work here and reap here? Or will he be taken off the land, herded into mining compounds, left slowly to die in soul and in body, as have some other peoples in the world's history? The answer depends upon whether or not young Africa is taught the arts and crafts of agriculture; whether or not the present missionary and governmental teaching forces are greatly augmented by new and enthusiastic agricultural missionary recruits.

May the West, and America especially, never lose sight of the world's debt to Africa, and be eager to accept an opportunity for Christian service to her great people.

CHAPTER VII

SOUTH AMERICA AND MEXICO: GRANARIES OF THE WESTERN WORLD

EUROPE and Asia may suffer from overpopulation. South America could comfortably house their surplus millions.

The soil of Europe and of Asia may be worn and burdened by generations of farmers and endless harvests. South America is rich enough to feed, and feed well, the millions of every land who eke out a scant livelihood from impoverished soils.

South America has vacant farmland ready to respond to the touch of the plow and the hoe in the hands of added millions of men and women and their children to countless generations. A problem of this and the next century may be to transplant land-hungry farmers from Europe and the Orient to these virgin valleys, and plains, and hillsides. What new history may be written in the accomplishment of this vast movement of agricultural peoples!

South America has an area of six million eight hundred thousand square miles, and a population of sixty-six million. That is less than ten persons per square mile. When one considers the rural sections only, such as rural Brazil, it is found that the population is less than three persons per square mile. Seventy per cent of Brazil's area, a region as large as the whole United States, consists of land thus sparsely occupied. What this means may be better grasped by

comparison with the situation in China, where one thousand four hundred persons live on each square mile of cultivated land, or in Korea, where eight thousand four hundred persons have been found trying to gain a livelihood from one square mile of land. Someone has estimated that Brazil alone, if as densely populated as Belgium, could contain all the people of the world and still have room for an increase of four hundred million; but, of course it could not raise all the food for a population of such size.

The following figures give some idea of the "roominess" of the South American republics and colonies, a characteristic that is especially striking in view of the fact that there are many large cities in these countries and that, except in Argentina and in the interior republics of Paraguay and Bolivia, most of the people live near the coast.

	<i>Comparative Area</i>	<i>Population</i>
COLOMBIA	10 times the size of Louisiana....	8,000,000
VENEZUELA	11 times the size of Indiana....	3,026,000
BRAZIL	Larger than entire United States	39,163,000
ECUADOR	Twice the size of Georgia.....	1,500,000
PERU	10 times the size of Arkansas...	5,500,000
BOLIVIA	4 times the size of New Mexico..	3,000,000
CHILE	5 times the size of Illinois.....	4,364,000
ARGENTINA	23 times the size of New York	10,904,000
URUGUAY	Twice the size of Indiana.....	1,808,000
PARAGUAY	Larger than California.....	791,000
BRITISH, FRENCH AND DUTCH GUIANAS...	14 times the size of Massachusetts	460,000

With South America we should also consider one other Latin American republic, Mexico, with 760,000 square miles (ten times the size of Nebraska) and 15,000,000 people.

Europe has seven times as many people as has

South America; but the latter is twice the size of Europe.

Seventeen countries of Europe—Italy, Spain, France, Turkey, Germany, Austria, England, Portugal, Poland, Denmark, Belgium, Czecho-Slovakia, Hungary, Switzerland, Holland, Albania, and Luxemburg—have a combined area about the size of Argentina. These countries have a combined population of 300,000,000—twenty-seven times Argentina's population. And Brazil is three times the size of Argentina!

The climate of any one of the North American states or regions is to be found somewhere in South America, plus the heat of the torrid zone, and minus the Arctic cold. The southern continent, therefore, being warmer than either North America or Europe, is better adapted than either to a greater variety of grains and vegetables. And in the Amazon basin, with its tropical heat and large rainfall, there are virgin forests of which no other continent can now boast.

What this vast and fruitful continent will produce for feeding and clothing the world, when it has all come under the control of scientific agriculture, can only be imagined in this day of beginnings!

NEW IMMIGRATION TO SOUTH AMERICA

One of the greatest problems confronting practically every republic in South America, and confronting Mexico also, calls for the counselling of the social engineer rather than the agricultural engineer. The latter, however, is vitally concerned in its solution as he surveys the crowded, hungry nations of Europe and Asia. The problem is this—how far, and upon what

conditions, will South America open her doors to the hungry who are seeking land? Will the doors swing open indefinitely to the enterprising sons of Japan, of China, of India—the countries that are really seriously overcrowded—or only to the white peoples coming from Europe? How can these Asiatic peoples, if welcomed, be assimilated into a culture which consists principally of Indian, Negro, Portuguese and Spanish elements and which has developed under American traditions of freedom? Can families be shifted from Asia and Europe to South America without rousing race antagonisms, civil strife, discord? These are questions for future history, but questions that are already beginning to arise.

To date the flow of new immigrants into South America has been largely from southern Europe, and more especially from the mother countries, Spain and Portugal. But there is increasing immigration from the more northern parts of Europe, and a considerable movement from Japan. The Chinese and Indians have not left their ancestral villages in any large numbers for this new land.

Immigrants into Brazil in 1929 included thirty-nine thousand Portuguese, sixteen thousand Japanese, nine thousand Poles, five thousand Italians and four thousand Spaniards. In 1926 it was estimated that there was a total of about two hundred thousand immigrants entering each year—principally Italians, Portuguese, Spaniards, Germans, and Japanese; and that there were about one hundred thousand Japanese settled in Brazil. Spain and Italy furnish most of the immigrants to Argentina—as many as two hundred thousand per year—and to most of the other Spanish-

speaking republics as well. The measures taken in the United States to restrict immigration have noticeably increased the general trend, even from parts of northern Europe, into South America, where about the only restrictions upon entrance have to do with matters of health.

Here then is a continent with millions upon millions of unoccupied acres, with its vast potential water power scarcely yet touched (only about two and five-tenths per cent of the estimated twenty-five million horse-power of Brazil have hitherto been brought into use), with untold mineral resources yet unexplored. The republics of South America offer perhaps the world's best new home for immigrants from overcrowded countries. The continent is especially hospitable to immigrants from the Latin lands of South Europe. How it will treat Asiatic immigrants, if their numbers increase rapidly, remains to be seen; thus far they have received a ready welcome.

THE INDIANS OF THE INTERIOR

When Pizarro made his conquests in South America he found the great Inca empire extending from what is now Chile and Argentina north to Colombia. The Incas were a highly civilized and peaceful race. But Spain, with her gunpowder, reduced the people to slavery. Another Indian population that lived on the lowlands of the Orinoco, the Amazon, and the La Plata, was less civilized. These peoples, too, were brought into subjection by Spain and by Portugal. Who these tribes were or where they came from is still the subject of learned debate; it is not believed they are American aborigines.

While no census of them has ever been taken, it is estimated that seven million five hundred thousand to ten million full-blooded Indians, the descendants of these early peoples, live in the highlands and the lowlands of Bolivia, Ecuador, Peru, Brazil, and Colombia. Four centuries of suppression have kept them submerged beneath the social, political, and intellectual life of South America; but it has not deprived them of wonderful physical constitutions and of a quiet power that still betrays an Inca inheritance. They are a people of great latent possibilities. The press and the government speak of "the problem of the Indian" in South America—and not without a fear of the day when he will revolt. With this Indian all South America, and perhaps all the world, must sometime deal.

In a report on "The Indians of South America" made to the Congress on Christian Work in South America, held in Montevideo in 1925, it was stated:

"If the inner vision looks out over these brown peoples living, it may be, on the fringes of coast communities, or others living far removed from civilization, with a simply-ordered life of their own, with agriculture, hunting and fishing, living in peace and kindness with each other, or the wild peoples in the dark tropical forests, observed now and then by an occasional traveller, naked as the wild creatures around them and scampering up the trees if any approaches—surely the heart will be stirred not only by their numbers, but by their great need.

"A little has been done for these peoples. Some considerable interest has been taken in them by governments. Assistance has been granted in agriculture,

and a readiness has been shown to cooperate with any who were willing to go in among the Indians and establish helpful relations. Something has been done by the ancient church of the land. There are indications of the good influence of Romanism, in the presence of the beginnings of a study of language, some slight progress in translation, and here and there educational and religious teaching, with remains of earlier zeal and energy dissipated through the years. Evangelical missions have thrust their rays of light into certain of these darkened communities—on the highlands of Bolivia, in the Peruvian Andes, in the southern part of Chile, in Paraguay and in Brazil. But, on the whole, almost nothing has been done, at least in an organized, systematic, comprehensive way, and the people are living feebly and like a stagnant stream, tilling the soil, fishing in the streams, hunting in the forest, by methods that have not changed for centuries. Disease, pestilential fevers, bites of insects, and exposure, all prey upon them. Their minds are full of the superstitions of pagan peoples, fearing the presence of spirits in all the mysterious operations of nature.”

Missionaries and others who were at the congress in Montevideo pleaded for the establishment of mission stations in the heart of Indian populations, where these long-neglected peoples may be taught to reap the reward of labor in the soil. One report said:

“Since the Indian is largely an agriculturist, any effort to approach him along agricultural lines at once establishes a vital point of contact. As he contemplates the results of new and easier methods of producing the fruit of the earth he is led to feel the

superiority of such methods over those to which he and his forefathers have been accustomed, and also to place confidence in the missionary and to give credence to what he may say about higher things. Where agricultural work is carried on alongside religious activities, the seedtime and harvest afford splendid opportunities of impressing upon the hearts of the workmen many spiritual lessons, which must constantly suggest themselves to them as they go about their work. Any approach to the Indian along the lines of his own physical activities may make his work become a constant object lesson, directing his thoughts to higher planes."

ABSENTEE LANDLORDISM AND PEONAGE

Closely related to the problem of the Indian of South America and of Mexico are the problems of peonage, of huge estates, of absentee landlords. These are related to the Indian both because the presence of a numerous backward race makes such a system possible, and because it is the Indian who suffers most from its existence. Many thousands of the Indians and mixed peoples live and labor, often from generation to generation, on great private estates where they are serfs, indeed but one step above slavery. The Congress on Christian Work in South America had a special commission considering this question; in its report it made some startling observations on land ownership:

"On the west coast of South America a man's property is not limited to a few acres between certain fences, but may stretch from mountain to mountain, or river to river. One can travel whole days within the limits of a single estate. In the Argentine one

hears of single holdings of three hundred thousand, of five hundred thousand, even up to one million two hundred and fifty thousand acres.

"Two evils grow out of the system. One is that of absentee landlordism, with all its attendant ills. Owners keep to the cities, living in wealth, ostentation, and luxury. With a sufficient income from large estates they find little incentive for developing the lands or for improving methods of cultivation. Many of the larger owners do not even live in their own country, but inhabit European capitals, depending on overseers to care for their interests. Between them and the humble workers in their fields there is nothing in common; rather, a great gap is fixed which in practically no country can be successfully bridged.

"Sometimes the laborer becomes a tenant, and the tenant a landowner; but it is a slow and exceedingly difficult process. The laborer, especially in the northern and west-coast lands, is practically a serf. . . .

"The peonage system is one of the crushing problems that the South American nations must face. Argentina and Uruguay seem to be making the most effort to secure free labor. The system varies from country to country, the southern countries approaching more nearly to a free labor system; but the general features are common to all. The peon has a small grant of land, on which he lives and which he farms, varying from two to six acres. In exchange for this privilege he is obliged to render certain service to the landowner, usually for a given number of days each week or month. It is true that he is paid for this labor, but only a miserable pittance, with the obligation in most cases to sell his produce to the landlord

and to buy his provisions from him. These are furnished at such prices that he is unable to make a living and is constantly in debt to his overlord. This debt, hanging over him, reduces him to practical slavery.

"His debt to the landlord can in some countries be transferred to another in case of the sale of the property, so that there is no practical way out. The peon is tied to the land. In one country a property is reckoned not as so many acres but as so many *brazos*—that is, hands. When the property is transferred, the peons pass to the new owner. Theoretically free, they are practically unable to break away from their yoke. Yet they can be dismissed at the will of the owner.

"But signs of a new day are not lacking, especially in Chile. Agitators have reached the country laborers, and some schools have been opened for them, so that the *inquilino* has been set to thinking. A peasant strike in the south of Chile occurred not long since. It is only the precursor of a better day. In general, however, there has been little done, either by governments or by individuals, toward the solution of these vexing problems."

THE LAND QUESTION IN MEXICO

For three centuries there was in Mexico a situation similar to that found in much of South America to-day—conditions of peonage existing under a system of great estates. Such conditions made for poverty, and poverty made for banditry. These abuses finally led to Mexico's series of revolutions, brought into power the present government, and also led to the framing of the present constitution of 1917.

Modern Mexico has not followed the example of Russia and confiscated the great estates. The peons have been given lands from the national domain, and are encouraged to become independent farmers. About seven million people have been led out of *hacienda* service into free villages and small farms. Much of this land is held on a communal basis. By 1929, the Mexican government reports, thirteen million acres had been distributed in small lots, and a National Farm Credits Bank, with regional associates, had been established to make loans to farmers upon small properties. In 1926 five major irrigation works were inaugurated; the first was completed in 1930; the others are still under way.

GOVERNMENTS AND AGRICULTURAL PROBLEMS

Every government in South America is watching Mexico's great experiment in dividing up her agricultural lands among those who with their own hands till the soil and produce food; and they are watching also the more radical experiment in Russia and the agricultural advance of Italy. It would seem that it is but a matter of time before the demands of a common humanity will lead South American nations, along one pathway or another, to better the lot of the landless peon, the ultimate producer of the continent's prospective food supply.

The nations are awake, also, to some of the problems of immigration and of building into the national life the Indian tribes of the interior—both of them problems that are fundamental to determining the future of Latin America's agriculture. Mexico, for example, plans to encourage a selected immigration into her

rural areas as soon as the needs of the present *hacienda* workers for land have been satisfied. The government of Chile, with fifty-six million acres of public land at its disposal, made, up to 1930, grants of ninety-one thousand different holdings; it organized also two banks to enable purchasers from this domain to establish themselves as private farmers. Argentina has opened two hundred and thirty-seven million acres of good farm land to colonization, and requires each prospective immigrant to produce a certificate of good character and ability to work. Peru is now constructing huge irrigation works to make waste lands available for farming; and it maintains an agricultural credit bank. Most of the South American governments have departments authorized both to rule and protect the Indians still living in remote and uncivilized tribal conditions. Some states have made an attempt to educate some of the Indian children; but taking the continent as a whole, little has been accomplished for the Indian by the several governments.

The problems and needs related to agriculture now facing the governments and peoples of South America in general might be summed up thus:

A larger rural population to develop the total agricultural resources of the continent and thus contribute to the world's food supply; the building of railroads and other modern means of transportation of agricultural products; the extension of irrigation to make available for cultivation certain desert areas and potentially rich mountain areas; adjustment of export taxes on agricultural products; division of the great estates and the improvement of the economic status of the individual farmer; establishment of rural credit

systems in countries where they have not yet been provided; increase in opportunity for education in rural areas; assimilation of the Indian into the life of the respective nations.

Obviously most of these problems will call ultimately for solution by government action, but the trained agricultural missionary can do much to hasten justice to the Indian and peon, to demonstrate better methods, to develop the use of better tools, better plants, better animals upon the farm. And over and around the rural village and its people he can spread the message of the gospel of Christ; he can give the countryside a new vision of its service, its place in the progress of civilization; he can help the people to find true joy in rural life.

AGRICULTURAL PROGRESS IN BRAZIL

In the first decade of this century butter was a luxury in Brazil, much of it being imported from France. Lard was imported from the United States, potatoes and onions from Portugal and Spain, rice from the Orient, and corn from the Argentine. The plow was seldom seen in use. The cattle tick had found its paradise, as it met with no opposition and had plenty of "grazing."

Transportation of agricultural products was difficult, almost all of it journeying at least part of the way to the market in a type of ox-cart with movable axle that might have been described by the Romans of the first century as the latest model. These carts were the only known conveyances that could possibly conquer the well-nigh impassable roads. The government was apparently powerless to improve the roads;

the carts cut them up, and the farmer refused to use anything else because the roads were so bad. This circle blocked transportation progress for decades.

In 1914 one and a half tons of chilled beef were exported. In 1918 sixty thousand tons left the country. Now modern packing houses are able to care for all the meat the country produces. The first creameries were small and primitive. Now a modern milk depot has been built in one city to handle fifteen thousand gallons of milk daily. One state alone shipped to outside markets in one year fifteen million pounds of butter, an equal amount of cheese, and millions of pounds of fresh milk.

Plows, harrows and seeders are now in common use, so much so that most of the country merchants regularly stock plows and parts. In a recent year the merchants of one small city in the interior sold one hundred and ninety-six plows of different makes, the larger part being the best and most expensive of the simple walking plows.

Silos and tick baths are now coming into more general use. Their construction is subsidized by the government. Good breeds of cattle are at a premium and importations are made annually by the government and by breeders. Lard figures largely in the export trade of the country. Horses and mules for human transportation, and oxen for hauling are rapidly being replaced by motor driven vehicles.

Production figures are now available through government census. Agricultural education is getting more attention. A recent addition to agricultural training is the College of Agriculture of the State of Minas Geraes, organized under the supervision of Dr.

P. H. Rolfs, former dean of the Florida Agricultural College. In addition to the Federal Department of Agriculture, most of the states have agricultural departments. Better transportation facilities, better and more numerous rural schools, country hospitals and state health service for rural districts, better agricultural credit—these and many other improvements are coming to the Brazilian farmer.

In 1907, agricultural mission work was begun in Brazil. The agriculturists worked with the people and with the government. Many of the activities of these missionaries are reflected today in the program of the Department of Agriculture. The missionary has stimulated the constituted government agencies and has been their counsellor in many projects that have contributed to progress in Brazilian farming during this period.

A RURAL LAD GOES TO SCHOOL

In the most humble of grass thatched huts in the interior of Brazil, Zacharias Silva was born forty odd years ago. He grew into manhood with less than the average outlook of the other boys of the countryside. His village was more than a hundred miles away from the railroad, and did not have even a grade school. The fortunate few who could attend the primitive school in the place studied their lessons aloud, and the smartest pupil was the one who could make the most noise for the longest period of time. The nearest high school was a three days' journey away. Zacharias was of African descent, which in Brazil was not a handicap, but he was desperately poor.

Dr. S. R. Gammon, a pioneer missionary of the

Presbyterian Church in the United States, penetrated into this far interior on his evangelistic trips. Being of rural training himself, he was at home on the farm and with the rural folk. Through him Zacharias heard the gospel and accepted it. Then his ambition for learning was whetted, and he was finally given the opportunity to go to the mission school at Lavras as the personal helper of Dr. Gammon. He proved to be a bright student, and what was more, quite willing to work his way as a student. He soon became a valuable assistant on the little farm and in the school kitchen. As Dr. Gammon brooded over the future of his young charge he thought, "Of what use will modern and ancient languages be to this boy when he returns to his country village? Will they enable him to farm more intelligently or to be a better farm laborer? Will they help him to rise above the routine methods which were taken over from the Indians by the settlers of Brazil and which are still in use? The agricultural possibilities of his home region are unlimited, but the methods of exploitation of the soil in now general use are resulting in decreasing returns. How can we prepare this boy to do things in a new and better way?"

There was no government agricultural school in the whole state. But Dr. Gammon determined to meet the need of Zacharias and others of his school constituency. In 1907 he sent to the United States for an agricultural graduate to go to Brazil and organize and direct an agricultural school. Work was actually organized in 1908. One of the first pupils to enroll in the new school was Zacharias Silva. After his graduation he began work as an assistant gardener on a government demonstration farm, but soon went to

Rio de Janeiro to do the same work on a large government horticultural farm in the Federal District. For some years he has been one of four county demonstrators for the District of Rio de Janeiro. He is a small landowner and is able to give his children the opportunities of education. Today he fills a place of service in the agricultural development of his country and earns as much in a month as many of his former village companions earn in actual cash in a year.

Thus founded in 1908, the Lavras Agricultural School, now part of the Gammon Institute, is one of the oldest agricultural schools under missionary auspices in the world. It has made a worthwhile contribution to the agricultural development of Brazil, both directly and through its demonstration work and the stimulus it has given to other agencies. This contribution is appreciated by the various governmental authorities—county, state, and federal; all aid the school with grants. Today it has the necessary laboratories and equipment for experimental and demonstration work. A large campus is being developed into a beautiful park, extending over about thirty-five acres. On the campus are the classroom building, the dormitory, the residence of the dean, the dairy building, and there are in addition a number of smaller buildings that have been used for the local agricultural fair and for other school purposes.

The farm of seven hundred and fifty acres lies partly within the city limits and is very well equipped with machinery and livestock. All the crops and fruits grown in that region are cultivated. The principal crops are coffee, corn, rice, beans, potatoes, soy beans, sugar cane, peanuts, cotton and cassava. The prin-

cial fruits are oranges, grapefruit, bananas, mangoes, peaches, plums, and quinces.

LEARNING TO FARM BY FARMING

All the students are required to do some practical work on the farm, and many experiments and demonstrations of real value have been made. The introduction into Brazil of the Duroc Jersey hog came about largely through the efforts of the school. The increasing popularity of the soy bean is due to the long experimenting of the school in varieties and in cultivation of this most useful plant. The school has also done much to popularize the silo, having on its farm one of the oldest silos in use in all Brazil.

A four-year course is given in agriculture, the last two years being of junior college grade. A shorter course with lower entrance requirements is also given. Careful study of the adaption of the course to the needs of the people and the country is carried on continuously. About one hundred graduates have been sent out, and most of them are on farms today. A number of them have gone to the United States for further study in agriculture, some at their own expense, others on government scholarships. A few of the graduates have posts in the Department of Agriculture of the federal government and are giving excellent service, especially in the development of cotton culture and in experiment stations.

Extension work has been a notable part of the program. Four out of five of the national corn shows were directed by the dean of the school. In 1918 the school offered its services to the federal government in its drive to increase the production of food and it

made a valuable contribution to that effort. A Bureau of Agricultural Service was later organized with the financial help of some leading business firms. A campaign has been organized to increase swine production, a national swine breeders' organization perfected, and help has been extended to a number of fairs and expositions. Over one hundred thousand copies of books and bulletins written by the faculty have been distributed. Articles for numerous farm papers are frequently prepared.

One of the features of the extension work has been a small local fair, the expense of which is covered by government grants, where livestock, farm products, poultry, fruits and vegetables, women's work, school work, farm machinery and some commercial products are shown. Three or four hundred cash prizes are distributed each year, and an effort made to stimulate all exhibitors to a production of better things on the farms. Amusement is furnished by the band and outdoor moving pictures.

The people at large have looked with sympathy on the efforts of the school and farm, and especially has the government shown its appreciation. By a special act of the state legislature the diplomas of the school are admitted to registration, and a number of scholarships are maintained by the state.

IN THE BRAZILIAN INTERIOR

An unusual missionary undertaking has been organized in the interior of Brazil by the Presbyterian Church in the U. S. A. following the transfer of the older schools and churches to the national Presbyterian Church of Brazil. The missionaries have gone out into

the remote interior, into the very heart of the rural and Indian areas, and have established four new mission centers. At each of these centers there are to be found a Christian minister engaged in direct evangelism, one or more teachers training young Brazilians for primary school teaching, a physician and some type of clinic or dispensary, and an agricultural specialist. The religious, educational, health, social and economic needs of the people are thus brought within the scope of a unified plan.

The oldest of these stations is at Ponte Nova, in the State of Bahia, where extensive mission buildings have been erected on a large farm. At Burity, in the State of Matto Grosso, there is a farm school with fourteen thousand acres of land; and other schools are located at Planaltina, State of Goyaz, and at Castro, in the State of Parana. With the westward flow of immigration into Brazil, and with increasing need for the training of agricultural leaders, especially among the Indians, these schools will assume growing importance.

Agricultural and evangelistic work among the Indians in the State of Matto Grosso has also been undertaken by the Evangelical Association for Work among the Indians.

A FARM SCHOOL FOR INDIANS

At the Hacienda Urco, near Cuzco, Peru, a famous center of Inca civilization centuries ago, a farm and farm school have been established as part of a missionary station by the Evangelical Union of South America. This is a strategic point for reaching the Quechua Indians of the mountains and forests. On this farm are a school, an orphanage, and an infirmary.

"The missionary in charge of Hacienda Urco, T. E. Payne, seeks to improve the agricultural methods of the Indians," reports the Rev. John Ritchie, of Lima. "Mr. Payne has introduced such implements as the hand thresher, the steel plow, the disc harrow, and the cream separator. Their use on the farm has led to such a demand for them by the small farmers that the Peruvian government arranged to put this machinery on sale in Cuzco. Tractors and other machinery beyond the capacity of the Indian have not been introduced. Mr. Payne has also been interested in better crops; Red Fife and Marquis wheat were introduced, acclimatized, and then sold extensively through the mountain country for seed. He has also been interested in improving stock and has introduced breeding rams of good pedigree, thus greatly improving in quality the output of the wool. Pedigreed pigs and bulls have also been introduced. The Peruvian government in many ways recognizes the value of the work that is being done.

"One of the greatest achievements of the farm has been the improvement of corn. By the introduction of California corn, and by crossing it with the Cuzco corn, a vastly improved South American type has been produced. Mr. Payne has also educated the Indians to distinguish between good, better and best in their output. He also replaced the old drinking *fiesta*, always held at the end of the crop season, by an immensely popular harvest home festival and show.

"Religious services are conducted on the farm and in the surrounding country, both in Quechua and in Spanish. Work of a directly evangelistic type has recently been begun by the Union with Sicuani as a

center. A number of congregations of Indians are now under the care of the Union in this central sierra."

POVERTY IN A RICH LAND

The Rev. Ezra Bauman went to Chile a quarter of a century ago to serve as pastor among needy peoples of town and countryside. He was a practical man, and soon saw the poverty of his people; he pondered on the wealth of the country and the poverty of its supporting rural life.

"Here is a fine country, with great farms and fertile soil, yielding only about one-tenth of what it can produce," mused Mr. Bauman, "yet there is poverty everywhere. Instead of starving in the town and paying high prices for staple foods, instead of working as peons and never eating enough of the foods they give their lives in raising, why should not some of our church members become small landholders and produce in abundance the foodstuffs their families need? Why should not the church buy a good farm and take the boys growing up in these Christian families, give them a good general schooling and a good agricultural training, and get them started on the road to economic independence?"

Out of Mr. Bauman's vision has developed the Agricultural School of El Vergel, formerly known as the Bunster Farm, at Angol. This is both an agricultural school and a demonstration farm of three thousand eight hundred acres designed to train boys, especially the sons of members of the church, in modern farming, dairying, and horticultural methods. It had been developed as the outstanding farm in South America by Don Manuel Bunster, a Chilean, who for several

decades experimented with all kinds of plants and trees and shrubs to see what could be grown in that garden spot of his native land. Señor and Señora Bunster planted many thousands of trees with their own hands in the early years of their experiments. Many of these have grown to immense size in the parks and gardens. The best nursery stock of fruits in Chile is to be found here.

The nursery covers two hundred acres of fertile black loam. There is well-developed stock of two hundred and fifty varieties of apples, one hundred and ninety-five varieties of pears, and a large number of varieties of peaches, apricots, plums, prunes, grapes, olives, lemons, oranges, grapefruit, nuts, and strawberries; and a wide variety of flowers.

The dairy has one hundred and fifty cows. Besides being turned out to pasture, the cows are fed alfalfa, clover, silage, and beets.

The farm proper consists of three farms producing wheat, barley, oats, corn, beans, peas, clover, alfalfa, potatoes, lentils, cowpeas, chick peas, sweet clover and vetch.

Twenty acres are given over to gardens on which are raised enough vegetables to supply the needs of the school and the mission staff. A wagon drives over daily with vegetables to the town of Angol, three miles away, where ten thousand people live. A similar wagon delivers milk each day to the town. In carpentry and machine shops the boys are taught the upkeep of utensils and machines for all the departments.

The staff of El Vergel is constantly experimenting in the introduction of new plant varieties and in the betterment of native agricultural material. There is

close cooperation between the school and the United States Department of Agriculture. The school sends to Washington the best Chilean seeds and fruits for propagation and receives in return many varieties of plants and fruits.

COOPERATION IN A RURAL PROGRAM

The task of teaching better agricultural knowledge and methods in South America and in Mexico, and the task of making those republics pleasant farmlands for future generations of happy and contented producers of the world's food is so great that only by cooperation of all persons and agencies concerned can the objectives be reached. Missions and governments must counsel and support each other in this undertaking.

Central mission stations, equipped for evangelistic-medical-educational-agricultural service, especially to the peon and to the Indian, stations such as the Presbyterians have developed in interior Brazil and as the Methodists are developing among the isolated mountain Indians in Bolivia, seem to be the most feasible approach.

The present mission effort, now but touching the need at a few spots, must be greatly enlarged if it is to make a lasting impression for agriculture, Christianized agriculture, on this granary continent of South America. The various missionary agencies must plan on a united and unified program, and they must make far greater investments of men and money and thought than they have given to South America in the past.

CHAPTER VIII

THE CHURCH AND THE FUTURE OF AGRICULTURE

THE Christian church in Europe and in America, through its mission agencies and through the younger churches springing up in the Orient, in Africa, and in Latin America, has directed much of its thought in recent years toward studying the agricultural and rural problem. As has been briefly shown in the preceding chapters, the church has made at least a beginning on an enlarged program of Christian rural service. There is still much to be done, and the forces at work seem pitifully small compared with the extent and difficulty of the task; yet it must be remembered that the hardest part of the pioneering has been accomplished, the needs have been mapped and charted, and it remains now for the Christian forces to make a reality of their program.

An organization that is giving impetus to the agricultural and rural movement on a worldwide scale is the International Association of Agricultural Missions, having its headquarters in the United States but reaching out in its membership and through its vice-presidents to every corner of Asia, Africa, and South America. It has made a number of original studies of rural conditions and it has become a clearing-house for the exchange of experiences between men and women laboring in distant and isolated rural fields. Its annual meetings have gathered together hundreds

of rural administrators, representing many Protestant denominations in America, and also many agricultural missionaries on furlough.

This body was formed in 1920 by a small group of men whose major interest was agricultural missions. At that time there were already under way a number of farm and rural enterprises both in the United States and on the foreign field; but for the most part they were generally regarded as hobbies, if not actually looked at askance, by church authorities. Industrial missions had by 1920 become recognized as a legitimate missionary undertaking, but few people were ready to recognize agricultural missions except as an incidental phase of the work of general evangelists and teachers. Yet within eight years the association had so convinced the church of the value of its cause that the problems of the Christian mission in relation to rural life became a major topic at the now famous Jerusalem Meeting of 1928. Following that meeting the International Missionary Council has taken steps to promote the agricultural program of the Christian church, and to make available to the churches and missionaries, in America and overseas, the result of agricultural experimentation, discovery, plans, programs, and undertakings, outlining the successes and failures. The council recommends that the exchange of experiences should be a major concern not only of the council and each mission and mission board, but also of the several national Christian councils.

A PROGRAM OF AGRICULTURAL MISSIONS

The specific program which the skillful missionary agriculturist will work out as best adapted in its de-

tails for the country to which he goes will depend upon the conditions existing among the people—their social, religious, and economic organization, as well as their actual knowledge and practices in farming; upon the attitude of the government and local agencies; and also upon the resources and enthusiasm and purposes of the agency sending him overseas.

If any real contribution is to be made, the present one hundred agricultural missionaries must be given several hundred new colleagues as rapidly as possible. One hundred men, no matter how or where they labor, can move but slowly among a billion farmers, a billion naturally conservative people who must be shown by actual demonstration extending over a period of years. Two general groups of men and women are needed among these agricultural missionaries-to-be. First, the more mature and experienced scientists and research workers of advanced training who can study the broad needs of a whole nation like China; experiment with crops, and seeds, and diseases of plants and animals; project plans for irrigation, for reforestation, for control of rivers, for the introduction of new plants or animals; develop curricula and literature for agricultural teaching in primary school and in college; and help to train the men and women of the country who will teach the present and coming generations. Secondly, there must be sent overseas also the younger trained specialists, men and women who can take this scientific knowledge developed by the seasoned experts, and can apply it practically on the individual native farm, on a demonstration farm, in a classroom.

To these two groups of agricultural specialists, Dr. Butterfield would add two others as necessary that the

total home and community life may advance along with the more technical farm development. He writes in *Rural America*:

"Social engineers—persons trained in the social sciences and capable of utilizing the best we have in this field for the development of economic and social life in the villages and hamlets. This term might be given a definition broad enough to be inclusive of any type of service that will improve the social conditions of rural folk, such as that rendered by teachers and preachers.

"A special group devoted to the training of teachers and preachers for rural work. One of the great needs is the training of a relatively large number of native workers who understand the rural field and who are willing to give their lives to that field. Not only are rural teachers and rural preachers needed but combination workers, that is, preachers who can help the farmers in their practical problems, teachers who can do the same or who can preach. These types of village workers must be versatile rather than too highly specialized. The service of these preacher-teachers, teacher-preachers, preacher-farmers, teacher-farmers does not by any means eliminate the regular teacher and preacher."

Prominent in the program must be education in agriculture. The Christian church in America and in Europe cannot hope to lift the standard of the Asiatic or African farmer through the comparatively few foreign missionaries it can send. The burden of the task inevitably will fall upon leaders from among the people. The trained native of the country knows the point of view, the psychology, the social attitudes

and inhibitions, the customary modes of procedure in an African kraal or in an Indian village, a knowledge it would take an Anglo-Saxon decades to acquire. Here again, the method pursued in training must depend on local conditions.

THE RURAL RECONSTRUCTION UNIT

In plans that have thus far been put forward for agricultural and rural development in Africa, China and India, Christian missionary and national leaders are advocating a mode of operation that may revolutionize mission work in the villages. This proposal is the organization, manning, and financing, largely by missions, but also with such local support as is possible, of the "rural reconstruction unit." Such a unit was thus defined by the all-India Conference on Rural Work in Poona in 1930:

"A rural reconstruction unit is a group of contiguous villages, perhaps ten to fifteen in number, in which as full a program as possible of rural reconstruction service shall be made available to all people. All agencies for educational, health, economic, and social progress will be urged to pool their efforts through some form of community council, in an attempt to get the people to cooperate in building a new type of Indian rural community. The church must lead in the endeavor to make the enterprise thoroughly Christian in spirit."

In interpreting this proposed unit plan, Dr. Butterfield says:

"Probably the real nucleus of the rural reconstruction unit is the community school—a school which shall give the village boys and girls an education of

the sort that fits them for life in the village. The school must impart as wide a range as possible of rural knowledge and assist the pupils in the acquirement of the various village skills. These schools must minister to adults as well as to youth and must be true centers for the educational life of the entire unit. The Fraser Commission [on Village Education in India] sufficiently emphasized the place which the community school should occupy, and scores of schools in India are making an effort to develop in this fashion. The success of the community school, however, will be greatly enhanced if it can be set at the center of a rural reconstruction unit.

"It would be unwise to lay down too arbitrarily the specifications for such a school, and opinions will differ as to the standard courses to be maintained. Doubtless, in this case as in all others in India, local needs and circumstances and further experience will have to determine these points. But I should like to urge upon the attention of the missions the following suggestions:

"That the work be in the vernacular, possibly with sufficient English to give the pupils a speaking knowledge, and hence taught by the direct method.

"That it be preferably a day school, with a concession of boarding facilities if absolutely necessary in order to secure the regular attendance of pupils for a stated and adequate period.

"That it be designed for girls as well as for boys.

"That it be of middle school grade, but with main emphasis upon rural knowledge, both technical and cultural, and considerable practice in rural skills. It should have something more than merely rural bias

courses. The project method should be used wherever practicable.

"That a two-year course would suffice, but there should be shorter courses for older boys and young men. Indeed, every possible device should be utilized to reach all available persons, even to the extent of courses of one week.

"That a parcel of land for demonstration, as well as for laboratory purposes, should be available.

"That adult education should be a major feature of the school, which should become the great center of activities and stimulus for all forms of education in this rural reconstruction unit, in conjunction, of course, with the cooperative society and the church.

"Obviously, such a school must be fitted intimately to the village schools and may also be the center of supervision of the village schools. Whether the village schools can be given up, and the pupils sent to a central school, is still a debatable question in India."

In addition to its availability as a center for agricultural teaching and for general instruction, this unit is proposed also as a center for the cooperative societies loaning money to the farmers; for the development of spinning and weaving—the village crafts emphasized by Mr. Gandhi—and other industries; for preventive medicine, hygiene, and sanitation, and for dispensary services; for the teaching and carrying on of play and recreation; for adult education and for religious education of all ages—and for many other cooperative social enterprises.

Dr. Butterfield in his report, *The Christian Mission in Rural India*, has given a suggestive outline showing the types of community agencies and leaders

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that might be enlisted for cooperation in the rural reconstruction unit:

THE CHURCH

- The Preacher
- The Preacher's Wife
- The Supervising Pastor

FOREIGN MISSION

- The Missionary
- The Missionary's Wife
- The District Missionary

THE SCHOOL

- The Teacher
- The Teacher's Wife

THE HOSPITAL

- The Doctor
- The Nurses
- The *Dais* (midwives)
- The Dispensary
- The Compounder

LOCAL COMMUNITY ORGANIZATIONS

- The Village Cooperative Society
- The Unit Central Bank
- The Boy Scouts
- The Girl Scouts

LOCAL GOVERNMENT

- The Village *Panchayat* (local council)
- The Unit *Panchayat*
- The Rural Community Council
- The *Taluk* Board
- The Village Headman
- The Village Writer
- The Cooperative Society Inspector

GOVERNMENT DEPARTMENTS AND AGENTS

- The Department of Education
- The Department of Health
- The Veterinary Department
- The Forestry Department
- The Department of Agriculture
- The Government Farm
- The District Commissioner
- The Revenue Officer
- The Settlement Officer
- The *Patwari* (appraiser)

This rural reconstruction unit is proposed for India, for the Philippines, for China, for Korea, for Africa, where the village is still an important center of activity. In each of these lands certain modifications would have to be made to meet local conditions, local possibilities, local organization. But is there not here suggestion that gives a vision of the possibility of cooperation of the agricultural missionary with every available person and agency in a united effort to make the countryside a garden in the Kingdom of God? The detail must be left to the individual genius and the geographic location of each missionary.

TRAINING FOR LEADERSHIP IN AGRICULTURE

Although there have been notable exceptions here and there, it must be said that most missionary thinking and planning and financing have during the past century been with the urban centers in mind. Great churches and training schools and activities of many kinds have been projected in the cities of India, China, and Africa. Theological seminaries have prepared evangelistic missionaries to man the city churches much more than to itinerate into or settle in the more inaccessible and remote villages and hamlets. Many of the cities of Asia and of South America have been fairly well supplied with preachers of the gospel, with hospitals, with colleges, and with industrial schools. Large areas of the interior of both continents, so far as the map of missionary activities is concerned, would seem to be undiscovered country. All this has made for an unbalanced approach to the really fundamental problems of those lands.

There is a growing recognition on the part of mis-

sionary administrators and others that attention must in the future be given to the needs of the billion people in rural areas, the majority of the world's population. The theological seminaries in the United States are beginning to recognize the need, and many are giving courses in rural sociology and kindred topics; some have instituted chairs with professors trained to lead in rural development; and a few have nearby farms where prospective pastors and missionaries can learn to love and use the soil. Missionary administrators are turning to the agricultural colleges of the country and finding there some of their choicest candidates for missionary service both at home and abroad. Sometimes they recommend that such prospective missionaries take, in addition to their technical agricultural preparation, some courses in a theological training school. Some mission boards and administrators are gradually bringing about a change in emphasis in many of their missionary schools of all grades from a curriculum fitting a pupil for an urban-centered life to one fitting him for a rural-centered life.

Dean Albert R. Mann, of the New York State College of Agriculture and Home Economics of Cornell University, gives in some detail a curriculum that should be followed in general by a person preparing to devote a life to missionary agricultural service. In an address before the International Association of Agricultural Missions he said:

"I think it may be said that one who is preparing to become an agricultural missionary should take a four-year course in a good college of agriculture where curricula are arranged to provide a measure of both liberal and practical education, to fit the graduates

for citizenship as well as for the art of farming. Certainly the agricultural missionary must be more than a successful farmer.

"In countries that are less advanced agriculturally, a knowledge simply of good farm practices will be very helpful, but the problems of soil fertility, insect and plant disease control, crop adaptation, plant and animal improvement, can be solved only by those who have some knowledge of the sciences on which agriculture rests—chemistry, physics, biology, bacteriology, physiology.

"To the natural sciences should be added some instruction in the social sciences—economics, sociology, and education. Whatever else the agricultural missionary may do he is at all times a teacher. He will be immensely helped in his work if he gains some knowledge of the principles and methods of vocational education, including the technique of demonstration, which has come to play a vital part in teaching.

"While every college of agriculture requires instruction in English, I should suppose that a fair mastery of at least one foreign language, acquired in high school or college, would be essential for a foreign missionary; not that the language itself may be later used, but that the training in language acquirement and structure would be highly serviceable. If to this there can be added training in phonetics and the methods of learning spoken language, much will be gained. While languages differ, the method of learning is much the same.

"At least fifty per cent of the college course should be devoted to technical agriculture, for one who is to lead a people into new achievement must have a broad

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basis in the sciences and the technique of farming, and in the requirements of soils, plants, and animals. The more one chooses his courses to get at the fundamentals, the richer his preparation will be.

"A course in sanitary engineering would be indispensable. One who is to help the country people should be able to devise some simple systems of drainage, sewage disposal, and water supply. Closely related to this is a knowledge of farm mechanics and farm engineering, including simple building construction, and the setting up, operation, and repair of ordinary farm machinery and gas engines. With this goes also an elementary knowledge of surveying, the layout of farm buildings and lands and the use of carpenter's tools. As the agricultural missionary is likely to have to do much of his own bookkeeping, at least until he is able to train an assistant, some knowledge of accounting methods, including cost accounting, would be an asset.

"While it will be difficult, in connection with other demands, to go far into veterinary medicine, which is a professional field by itself, it is possible to take limited work in this subject. Draft animals are necessary to agricultural prosperity nearly everywhere, and meat and milk producing animals are highly essential to the best development of agriculture and human well-being. Diseases have been the curse of animal husbandry in many lands and the missionary is likely to find this one of his pressing problems.

"In addition to the formal classwork, one should acquire knowledge of farm practice from actual experience. The farm-reared young man is likely to have at least a good general foundation. Much can

be added by a wise and profitable use of the summer vacations.

"As an incident to one's college course, the prospective missionary can add to his equipment if he will acquaint himself with the organization of agricultural schools and colleges and particularly with the extension service which has now attained such large dimensions as a means of direct service to farmers. If he can know the region into which he is to go, he may find it desirable not to gain all his training at the most convenient institution, but to spend part of his time in a section which most clearly resembles his future mission field in soil, climate, and character of products.

"Two things, however, would seem to be self-evident. The prospective missionary should somewhere take at least a brief modern course in the fundamentals of the Christian religion. One cannot successfully propagate a religion which he does not himself fully understand. In addition, he should know something of the literature, history, and religion of the people to whom he is to go. His status among these people will be elevated by evidences of such knowledge; and one is engaged in a doubtful undertaking if he endeavors to replace a civilization which he does not understand. I believe that modern missionary methods provide that one shall build on the best that he finds rather than to begin by tearing down.

"One should also systematically build up a library for future use, covering literature, history, poetry, religion, economics, sociology, education, and the like, and standard works on all phases of agriculture.

"This statement of the educational preparation of

the agricultural missionary is avowedly general and seeks merely to indicate the nature of the desired training and to emphasize a few aspects which should perhaps have special attention. Much that bulks large in success on the field does not come primarily from education, but depends on personal characteristics. These may, however, be aided by the educational process. Sound health and a knowledge of personal hygiene; ability as a leader and organizer; energy, initiative, self-reliance, balance of judgment, sound common sense, steadiness of purpose, patient perseverance, adaptability, cheerfulness, courage, devotion—these all denote personal characteristics of large value to the missionary."

And Dr. Butterfield makes the interesting comment about the training of persons to teach agriculture and rural betterment in India:

"I am inclined to think that the best Westerner in the field of agriculture is the man who has a rather broad agricultural training and understands not only agricultural science and practical farming, but who also in some measure grips the economic and social problems that are so closely entwined with each other, and with the practical problems. The best function for such a man is perhaps as the technical adviser of a mission or of a group of missions, with respect to those aspects of service that deal with economic relief. Moreover, every college, every training school for teachers and for pastors, and perhaps every high school should have one teacher who may be called a rural sociologist. He must have a grasp of the rural problem as a whole. There is one other type of service that I wish to emphasize especially. That is the work

for women. I have been saying in India, in Europe, and at home, that if I were the missionary Mussolini of India, I would place tomorrow a thousand Western women in the villages of India. The uplift of the village women of India is basic, no matter how you look at it, and their needs are as wide as human needs themselves. There must be a large number of Western women serving, preferably in pairs or in trios, in the rural reconstruction units or a group of contiguous villages, themselves helping the village women and training Indian women for that service."

Ideally a son of Asia or of Africa or of Latin America who is going to give his life to promoting the agricultural knowledge of his own people should have as wide a training as a missionary serving in the same field and working toward the same end. Practically that may not always be possible. The immediate problem often is to train a large number to do a specialized work in a limited territory; and often the youth available for such service do not have the heritage and the background of general education necessary for those who are to become highly trained technicians. While in China an institution may find it possible to train men who are the equal of American agricultural college graduates in scientific equipment, in Africa it may be best at present to do much of the instruction through pastor-teacher-agriculturists who have only a practical groundwork of farm science.

THE CALL TO AGRICULTURAL SERVICE

Agriculture—man's cooperation with God in producing from the earth sufficient food and raiment to sustain and enrich the life of the whole human family

and in constantly renewing the soil so that it can serve countless future generations—is the oldest of occupations and one of the newest sciences. With increasing population, the need for scientific attention to the whole range of problems involved becomes more acute each decade and century.

As the geographical frontiers disappear one by one, here are new scientific frontiers that beckon the agricultural pioneer into the farthest reaches of every continent. Here, indeed, is the new field of romance, of discovery, of adventure, of service. In every corner of the world, God is in need of co-laborers in the joy of "feeding my sheep." The hungry peasant of Macedonia, the debt-burdened outcaste of an Indian village, the flood-driven mother and babe in a Chinese river valley, the serf on a Bolivian plantation—all are turning to God in a plea for release from the terror that besets their lives. And God can send them release only in the form of a man or woman—a man or woman to whom he has given opportunity for education and development and who has therefore an obligation to serve. Increasingly such enlightened men and women—not because they have complete knowledge, but because they have some advantage in agricultural science and are eager for the new growth that comes with service—will be called upon to assume many new responsibilities in the years just ahead. They will be called upon to cultivate the farms, to teach farmers-to-be, to delve into new phases of agricultural life and bring forth new discoveries in places far from their homes. Mission boards constantly seek such men and women and the funds to send them in answer to hundreds of Macedonian calls.

"Perhaps there are college men and college women in America who would respond to such a need as that of rural India if they could do so without becoming 'missionaries,'" says Dr. Butterfield. "Frankly, I regard that as almost impossible, and certainly inadvisable. First, because the missionary spirit is essential. To go merely for adventure, for novelty, is unthinkable. To go in the spirit of Jesus himself is abidingly fundamental. Furthermore, at present there are not open many opportunities for service of this sort outside the regular missionary organizations. Indeed, there is no reason why any person who is genuinely religious should hesitate to serve the missionary organizations. The range of service is constantly broadening, the opportunities for influence are rapidly increasing. The missionary enterprise is steadily enlarging the borders of its area of freedom for experiment and demonstration in wide reaches of social service, motivated and carried on in the Christian way."

The hungry millions of the world can be fed at God's plenteous table only as young men and young women, devoted to the purposes of Christ and trained in all that is now known of agricultural science, give themselves to humble service in needy villages and starved countrysides. Those agencies concerned with the development of a new rural civilization the world over are looking for these builders among the trained youth in the colleges, agricultural schools and churches. May there be ready response from the youth of high ideals, of Christian purpose, of heroic willingness to lose self in service.

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